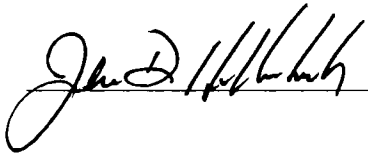


VERIFICATION

I, John D. Hollenbach, hereby state that the facts set forth above are true and correct to the best of my knowledge, information and belief and that I expect to be able to prove the same at a hearing held in this matter. I understand that the statements herein are made subject to the penalties of 18 Pa. C.S. § 4904 (relating to unsworn falsification to authorities).

Date: October 10, 2018



BEFORE THE
PENNSYLVANIA PUBLIC UTILITY COMMISSION

DOCKET NO. R-2018-3000834

PREPARED DIRECT TESTIMONY

OF

JOHN D. HOLLENBACH

REGARDING
OPERATIONS & CAPITAL ADDITIONS

SUEZ WATER PENNSYLVANIA INC.

April 27, 2018

SWPA STATEMENT NO. 1
DIRECT TESTIMONY OF JOHN D. HOLLENBACH
REGARDING OPERATIONS AND CAPITAL ADDITIONS

I. Introduction

1

2 **Q. What is your name and business address?**

3 A. John D. Hollenbach. My business address is 4211 East Park Circle, Harrisburg, PA
4 17111.

5

6 **Q. By whom are you employed and in what capacity?**

7 A. I am employed by SUEZ Water Pennsylvania Inc. ("SWPA" or the "Company") as General
8 Manager and Vice President.

9

10 **Q. What is your education background?**

11 A. I have a Bachelor of Science Degree in Environmental Engineering from Pennsylvania
12 State University.

13

14 **Q. Please describe your work experience.**

15 A. I have over thirty-nine years of experience in the private water utility sector, starting in
16 1979 with the former General Waterworks Company as a Staff Engineer and holding
17 multiple positions in Arkansas, Delaware, Missouri and Pennsylvania.

18

19 **Q. Have you previously testified before any regulatory commissions?**

20 A. Yes, I testified before the Pennsylvania, Missouri and Delaware Commissions in formal
21 service complaints, certification hearings, and rate filings.

22

3

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1 **Q. Are you a registered Engineer?**

2 A. Yes. I have a Professional Engineer's License in Pennsylvania, Delaware, and Arkansas.
3 The Arkansas and PA licenses are in an inactive status.

4
5 **Q. What is the subject of your testimony?**

6 A. In addition to a general overview of the Company's operations, I will present testimony on
7 the following:

- 8 • The Company's rate case history and the rate impact to its customers;
- 9 • The Company's educational efforts regarding conservation and the value of water;
- 10 • The Company's capital additions through the fully-projected future test year ending
11 December, 2019 (the "FPFTY") as well as a review of its capital expenditures under
12 its 2015 rate filing;
- 13 • The Company's Long Term Infrastructure Investment Plan ("LTIIP");
- 14 • The Company's efforts to control costs and maintain rate stability;
- 15 • The Company's organizational changes since the last base rate case;
- 16 • The Company's safety and compliance culture;
- 17 • The Company's customer service;
- 18 • The Company's non-revenue water program;
- 19 • The proposed changes to the Company's tariff Rules and Regulations; and,
- 20 • The acquisition of the water system assets of Mahoning Township utilizing Act 12 of
21 2016.

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II. Description of the Company

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Q. Please give a general description of SWPA.

A. SWPA provides water service to approximately 60,400 customers in 8 counties and 39 municipalities throughout Pennsylvania. It operates five surface water treatment plants ranging in size from three quarters to twelve million gallons per day. It also operates 29 wells with varying degrees of treatment, 30 booster stations and 36 storage facilities. Its infrastructure includes over 800 miles of main, 12,500 valves and 4,000 hydrants.

Q. Please provide a breakdown of the customers served by SWPA.

A. SWPA currently provides water service to approximately 60,400 customers with approximately 90 percent being residential, eight percent commercial and the remaining two percent industrial, public and private fire.

III. Impact of Rate Change and Customer Usage Patterns

Q. When was SWPA's last general rate filing?

A. SWPA last filed for a general rate increase on January 28, 2015. The case resulted in the Commission granting the Company an increase in annual base revenue of \$7,100,000. The rates became effective October 29, 2015.

Q. What is the current rate per hundred gallons?

A. The residential rate is \$0.77506 per hundred gallons, which means that one penny will buy 1.3 gallons of water. All other classifications have the same rate (\$0.77506) for the first 25,000 gallons. For additional usage, the commercial rate is \$0.5421 per hundred

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1 gallons, the public authority rate is \$0.54321 per hundred gallons and the industrial rate
2 is \$0.57618 per hundred gallons. There is a special industrial rate, to which the Company
3 is proposing some changes. See Paul Herbert's Customer Rate Design Testimony.
4

5 **Q. How much does an average residential customer use per day and what does that**
6 **equate to in cost per day under current rates.**

7 A. In 2017, a residential customer used approximately 115 gallons per day or 3500 gallons
8 per month which equated to seventy cents (\$0.89) per day plus an additional thirty-seven
9 cents (\$0.45) per day for customer charge.
10

11 **Q. How would the Company's proposed increase impact the residential customer?**

12 A. The cost for 115 gallons per day would increase by approximately sixteen cents (\$0.16)
13 per day.
14

15 **Q. Has the Company seen a decrease in residential customers' usage?**

16 A. Yes, the Company has seen a steady decrease in residential customers' usage over the
17 past several years, which is explained in greater detail in Constance Heppenstall's direct
18 testimony.
19

IV. Outreach and Education

20
21 **Q. Describe the Company's efforts to educate the public in conservation and the value**
22 **of water.**

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1 A. The Company knows that water is one of our most precious natural resources. As a
2 responsible steward of this resource, the Company is committed to educating the public
3 about the value of water and the importance of conservation. See Minimum Filing
4 Requirement XI.06 for a more complete description of the Company's efforts in this
5 regard.

6
7 **Q. Please describe in general the Company's outreach program to customers.**

8 A. The Company has taken several proactive steps not only to educate its customers, but
9 also to receive input and feedback from them. These steps are listed below:

- 10 • SWPA provides biannual newsletters to our Municipal and Township officials,
11 regulatory agencies, such as the Pennsylvania Public Utility Commission,
12 Pennsylvania Department of Environmental Protection ("DEP"), Chamber of
13 Commerce officials and state legislators whose constituents are also our
14 customers. The newsletter helps put accurate information into the hands of public
15 officials, enabling them to best inform their constituents when and if issues or
16 questions arise. It includes information about the Company, its activities and
17 initiatives, the accomplishments of our employees, and the investments made to
18 meet regulatory requirements and improve water quality and service reliability.
- 19 • Social Media – The Company routinely posts customer-centric information related
20 to operations and services on our Facebook and Twitter sites. In addition to
21 notifying customers of events that may impact their water service, the posts include
22 seasonal, weather-related tips, such as how to avert frozen indoor pipes and when
23 to avoid watering lawns and gardens during summer.

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- 1 • Customer Emergency Notification System – Since 2006, the Company has used a
2 dialer phone system, known as “Rapid Alert” to notify customers about water
3 service-related urgencies. They include water main breaks, boil water advisories,
4 water conservation requests and urgent operational issues, such as spot hydrant
5 flushing in small areas. A new system, known as “Notify,” which interfaces with
6 the Company’s GIS platform, was implemented in early 2018 and allows for
7 notification via text and email in addition to phone.
- 8 • Web Alerts: Website messages are routinely posted to detail water service-related
9 urgencies, including those listed above. The website link is included within the
10 Company’s social media posts regarding the same information. Fire hydrant
11 flushing messages are also posted on the website for each affected water system.
- 12 • SWPA has an active Customer Advisory Council (“CAC”) in each of its four regional
13 operation areas. Each council includes representation from the ranks of our
14 residential, commercial and industrial customers, including community leaders.
15 Councils meet three to four times per year at varying locations. Members are
16 asked to provide feedback on proposed programs, communications and events
17 relating to SWPA’s mission and services.
- 18 • On June 2, 2017 Eric Gernath, CEO of SUEZ North America, visited the
19 Pennsylvania Operation and met with key customers and elected officials to
20 discuss water related topics.
- 21 • A stakeholder meeting was held on October 4, 2017 with twelve strategic
22 commercial customers in attendance.

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- 1 • Company officials met personally with top officials from the colleges/universities
2 that the Company serves, to discuss how to best partner with them regarding
3 environmental awareness for their 20,000 plus students/faculty.
4

5 **Q. How has the Company promoted environmental causes within the community?**

6 A. The Company has achieved this by working with regional environmental preservation
7 organizations intent on promoting natural resources. We have collaborated with the
8 Columbia County Conservation District for the last several years to promote water
9 conservation and protection of drinking water sources. The Company participated in a
10 tree-planting event during April 2017 that was coordinated by the Manada Conservancy.
11 The SUEZ Foundation provided a grant during 2016 to cover costs associated with this
12 event. Since 2001, the Company has also partnered with the Yellow Breeches Watershed
13 Association (“YBWA”) to promote watershed protection through our annual “Trout Day”
14 community environmental preservation event held at one of our surface water treatment
15 plants on the first day of trout season in Southcentral Pennsylvania. Anglers and other
16 event attendees are provided with educational information by SUEZ and YBWA that
17 stresses the value of recycling. This event has resulted in regional news media coverage
18 regarding the vitality of environmental preservation.
19

20 **V. Prudent Management of Costs and Promotion of Efficiency**

21 **Q. Please describe how the Company has prudently managed its costs?**

22 A. The Company recognizes that overall costs are going to increase each year. Labor,
3 materials costs, health insurance, etc. are some examples of annual cost increases that

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1 cannot be avoided or, even in some circumstances, mitigated. The Company also
2 understands its responsibility to provide an excellent level of services to its customers.
3 Cutting costs simply to keep rates low is not an option where the public is dependent upon
4 the quality and reliability of the services. Therefore, the Company must find ways to
5 operate more efficiently. The Company strives to continuously improve its service level
6 by utilizing new technology, changing business processes and continuing to invest
7 prudently in its assets.

8
9 **Q. Can you give a few examples of how the Company is utilizing new technology to**
10 **reduce costs, improve business efficiency, or meet regulatory requirements?**

11 **A.** Yes, I will highlight the following seven:

- 12 • **Project Phoenix** – This project is a workforce management project to improve the
13 efficiency of the Company's field work. EPC, a consulting firm, was retained in
14 2017 to evaluate the Company's processes. Phase one of the project was to
15 develop the "As-Is Model." Phase two was to create a "To-Be Model" and phase
16 three is to implement the "To-Be Model." The Company just completed phase
17 three which involved a six-week period of EPC meeting with employees in assisting
18 them with new roles and processes.
- 19 • **GIS** – The Company has updated its GIS to a real-time cloud-based system and
20 has provided all of its utility employees with laptop computers to view the
21 Company's linear assets. The ability to both view and edit assets in the field has
22 resulted in a number of benefits; namely a paperless system, the ability to "face
23 time" others for advice -- thus reducing the number of trips and allowing for timely

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1 decisions, and empowering the field employees to make decisions resulting in
2 better customer service.

3 In support of the GIS program the Company has also equipped the field
4 personnel with GPS devices to capture assets within a several inches accuracy.

5 The data captured in the field is then updated daily providing the employees with
6 the latest accurate data.

- 7 • **Asset Management** – The Company’s asset management utilizes the INFOR
8 computer software to capture vertical assets. To date, over 2,400 assets have
9 been inputted into the system generating approximately 200 work orders per
10 month. The Company also has a goal of bar coding all the assets by the end of
11 2018.
- 12 • **Radio Read Meter Program** – The Company has completed installing radio reads
13 on all of the customer meters. This has reduced the total read time from
14 approximately 180 days to 16 days. In addition to obtaining the meter reads for
15 billing, the Company utilizes the technology to obtain “non-billing” meter reads.
16 The Company can use this data to improve customer service by 1) reducing the
17 number of visits to obtain a meter reading, 2) collecting reads in designated areas
18 to evaluate unaccounted-for water, and 3) obtaining hourly usage data for up to 40
19 days by field interrogating the meter unit.
- 20 • **Strategic Metering** - The Company is in the process of identifying key customers
21 (*i.e.* large users, medical facilities, etc.), and then installing meters that allow for
22 real-time flow data that the Company can access via software. To date, the
23 Company has installed 333 meters and has a goal of 500 installations. The data

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1 collected by these meters help evaluate unaccounted for water, optimize our
2 hydraulic model, and provide valuable information to the customer.

- 3 • **Infrastructure Optimization** – The Company has implemented several computer
4 based tools to ensure optimization of its infrastructure projects. These tools
5 include:

- 6 • **Haested** - Computerized Hydraulic models which assist in planning and
7 design.

- 8 • **Optimatics** - Optimizer software by Optimatics analyzes water distribution
9 and collection systems by evaluating hundreds of thousands of asset
10 options and capacity combinations against multiple objectives such as
11 cost, hydraulic performance, energy, and water quality.

- 12 • **Info Master** - SWPA utilized a risk-based rehabilitation and replacement
13 planning study to determine priorities for its infrastructure assets. The risk
14 score is calculated for each pipe by estimating the Likelihood of Failure
15 (LOF) and Consequence of Failure (COF). The recommended actions for
16 each pipe in the network (e.g., investigation, rehabilitation, replacement,
17 etc.) are identified through a detailed decision tree flow chart. The study
18 allows the Company to identify potential project areas for further detailed
19 analysis and promote collaboration with other agencies to try to find
20 common areas to minimize disruptions and reduce costs.

- 21 • **Energy Efficiency** – The Company is using digital technologies to improve energy
22 efficiency. Power meters have been installed on strategic pumps to track the real
23 time power usage of the pumps. Strategic pumps are identified as higher

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1 horsepower pumps that operate more than half of the year. Of the 30 strategic
2 pumps identified, 20 now have power metering with the remaining to be completed
3 this year. The power meters are connected to SCADA and our online database,
4 eOps. A first-of-its-kind energy dashboard to track pump efficiency in real-time will
5 be deployed to the strategic pumps in SWPA by the end of this year. The energy
6 dashboard, along with onsite pump efficiency testing, will optimize operations and
7 identify pumps that need to be rehabilitated, replaced or redesigned

8 Another smart energy technology being implemented this year is Specific
9 Energy at the Sixth Street Water Treatment Plant. The Company is installing
10 Specific Energy's Dynamic Pump Optimizer ("DPO") on the five high service
11 pumps at the plant. Every five minutes, the DPO will use recently tested pump
12 curves to compute the optimal pump station operation that meets the desired flow,
13 pressure or tank level criteria while minimizing energy consumed. The DPO also
14 models energy consumption for existing versus factory pumps to calculate
15 prospective capacity recovery and energy reduction. The model results are then
16 used to compute key performance indicators, including Net Present Value (NPV),
17 associated with repairing each pump. We will initially operate in advisory mode
18 (operators will receive recommendations from the DPO to select which pumps and
19 speeds to use). If the pilot is successful, the Company will transition to automatic
20 mode (the pump station PLC will use recommendations from the DPO to
21 continually optimize operations of the pump station).

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VI. Customer Service Improvements

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Q. Please describe the Company's ongoing efforts to measure and provide continuous improvement in the services that it delivers to its customers.

A. In addition to previous information provided in my testimony about customer outreach, the Company has taken the following steps to improve customer relations:

- Customer service workshops were held for training on the improved website.
- Web Enhancements that are more streamlined with navigation ease for the customer with built-in efficiencies for the Company. Additional options have been made available such as direct debit where customer service input only occurs for exceptions after company validation. Customers can sign up for notifications and alerts that pertain to their account. Customers can view and reschedule most appointments that have been made. Customer billing and payment information is available for up to approximately one year and customers can print a copy of their bill(s). Customer service representatives can also provide a tutorial by walking a customer through the various website options by utilizing the customer's account and directing the customers to options for which they may be searching.
- Process improvements have been developed geared to reducing field service orders by continuing to revise and train regarding decision trees (process flows) for our customer service representatives when scheduling field service orders.
- Annually SWPA has hosted a PUC (BCS, COM, TUS, AUD, I&E) workshop which includes interactions with SWPA employees on water quality, customer service, non-revenue water, field work, etc. Those who attended were introduced to our hydro-excavator, our leak detection equipment, the operation and function of a

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1 hydrant, a website presentation, and a host of other key functions within the
2 various departments. A tour of the Hummelstown Plant is also included in the day.
3 There is a great wealth of knowledge interchanged during this job shadowing event
4 which assists BCS in responding to customer inquiries and complaints.

5
6 Another way the Company gauges its customer satisfaction is the number of
7 informal and formal complaints the Company receives. In 2016, the Company had 25
8 billing informal complaints and 15 service informal complaints and, in 2017, it had 18
9 billing informal complaints and 19 service informal complaints. Based on 60,000
10 customers, this is equivalent to one billing complaint for every 2,790 customers and one
11 service complaint for every 3,529 customers based on the average of the two years.

12 With regard to formal complaints, there have been only seven formal complaints
13 filed in 2017. All Seven complaints were settled with the customers withdrawing their
14 complaints. See Minimum Filing Requirement IX.04 for more detail on formal complaints
15 since the last rate proceeding.

16
17 **Q. What other initiatives has SWPA promoted to improve service to its customers?**

18 **A.** The Company has, among other things, implemented the following initiatives:

- 19 • **E-billing** -- The Company offers e-billing to its customers. As of December 2017,
20 15,699 customers are utilizing e-billing to realize a "Green" solution to routine
21 billing. E-billing adds a customer convenience and reduces the cost of bill
22 procurement. The Company also offers direct debit and, as of 2017 at year-end,
23 10,448 customers were enrolled,

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- 1 • **Customer Inquiries** -- The Company, utilizing its call center located near
2 Harrisburg, has set a goal of answering all customer calls in less than thirty (30)
3 seconds. This is monitored on a weekly basis. In 2017, customer calls were
4 answered locally on an average of twenty six (26) seconds.
- 5 • **Abandoned Phone Call Rate** -- The Company has set a goal for having an
6 abandoned phone call rate of three to five percent. This is monitored on a daily
7 basis. In 2017, the Company had a rate of three percent.
- 8 • **Meter Reading**-- The Company has set a goal of obtaining 99% of its customer
9 meter reads on its first attempt. In 2017, the Company had a 99.6% actual first
10 read rate.
- 11 • **SUEZ Cares** -- The Company maintains a customer assistance program called
12 “SUEZ Cares” for those genuinely impacted by challenging economic times. In
13 2017, the Company provided \$3,858.00 of financial assistance to forty-six (46)
14 customers. In 2016, forty-six (46) customers were also assisted with \$3,687 of
15 financial aid.
- 16 • **Convenience Fee for Credit Card Payment** – (See Connie Heppenstall
17 testimony on how the Company plans to recover these costs.) Currently,
18 customers who pay by credit card are assessed a convenience fee of \$1.99. The
19 Company has decided to waive this fee for the following reasons:
- 20 ○ To provide another alternative for customers to pay their bill in a more
21 timely manner;
- 22 ○ To provide a more-efficient way of receiving payments on delinquent
23 accounts; and,

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- 1 ○ To meet customer expectations. The Company has numerous inquiries
2 and complaints about assessing a fee.

VII. Personnel Requirements

5 **Q. What organizational changes has the Company made to ensure that its operations**
6 **remain current?**

7 A. Since the last rate case, the Company has strengthened its operations by adding a data
8 analyst on January 30, 2017 and converting a part time accounting position to full time
9 position on June 12, 2017.

10
11 **Q. Has the Company laid off any employees since the last base rate filing?**

12 A. No.

13
14 **Q. Has the Company eliminated or reduced any positions since the last rate filing?**

15 A. No. Despite adding over 1,000 customers during the past two years, the Company has
16 maintained the same field workforce. It is was able to do that by ensuring there is
17 continuous improvement and by investing in technology.

18
19 **Q. Is the Company planning on adding any new full time positions by the end of the**
20 **FPFTY to its current operations?**

21 A. Yes, there are three full time new positions approved for hire: (1) SCADA/Electrician; (2)
22 Transmission & Distribution Assistant Supervisor; and (3) Production Shift Supervisor.

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1 These positions are necessary to ensure continuous improvement and oversight of the
2 Company's operations.
3

4 **Q. Have any of these positions been filled?**

5 A. No, they are all included in the 2019 budget. The Company's goal is to commence the
6 job search in the fourth quarter of 2019 and fill the new positions within the first quarter of
7 2020.
8

9 **Q. Is the Company planning to add any part time positions by the end of the FPFTY
10 for the Company's current operations?**

11 A. Yes, the Company is planning to hire a part time administrative assistant. This position
12 is necessary to handle the increased amount of administrative work required by a
13 supervisor.
14

15 **Q. Is the Company planning to add any new full time positions by the end of the FPFTY
16 as the result of any growth initiatives?**

17 A. Yes, the Company plans to hire one Mahoning Township employee upon the closing of
18 the acquisition.
19

VIII. Unaccounted-For Water

21 **Q. The 2015 Base Rate Case Settlement included the following stipulation in regard to
22 Unaccounted-For Water:**

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1 *I. UWPA will continue to employ the methods to reduce Unaccounted-For*
2 *Water as set forth on pp. 21-24 of John Hollenbach's Direct Testimony, UWPA*
3 *Statement No. 1, and in the currently-effective version of 52 Pa. Code § 65.20.*

4 **Has the Company followed up on each of these action points and, if so, please give**
5 **a brief summary of what has been accomplished?**

6 A. Yes. In addition to the MFR XI-2 response, below is a summary of how the Company has
7 continued to address Unaccounted–For Water (UFW).

- 8 • Employ a staff of three employees dedicated to UFW;
- 9 • Conduct bi-weekly meetings with all departments to address UFW;
- 10 • Investigate unmetered fire services for unauthorized use;
- 11 • Meter all new fire services;
- 12 • Install all new meters in a pit located at the property line;
- 13 • Conduct ongoing leak surveys;
- 14 • Install permanent data loggers;
- 15 • Review SCADA data to analyze flow trends for increased usage at night;
- 16 • Accelerate the Company's main replacement program;
- 17 • Implement pressure management;
- 18 • Utilize district metering zones to investigate UFW in smaller segments;
- 19 • Conduct a pilot program with outside consultant "Valor" to investigate 15,000
20 customers for potential meter inaccuracy;
- 21 • Implement a production meter calibration program; and,
- 22 • Install hydrant lock devices to discourage unauthorized use of fire hydrants.

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1

2 **Q. What has been the impact to the UFW percentage as a result of the actions that the**
3 **Company has taken since its last base rate filing?**

4 A. The Company has been able to reduce its UFW in the past two years from 16.7% to
5 14.7%, which is equivalent to 282 MG per year or slightly over three quarters of a million
6 gallons per day.

7

8 **IX. Quality and Reliability of Service**

9 **Q. Has the Company had any Tier One or Tier Two violations since its last rate case**
10 **proceeding?**

11 A. Yes. In 2016, there was one and in 2017 there were two. See MFR IX-1.

12

13 **Q. Has the Company had any informal or formal PUC complaints regarding water**
14 **quality since its last rate proceeding?**

15 A. No.

16

17 **Q. Did the Company have any customers out of service for a period longer than 24**
18 **hours?**

19 A. No. Since the last rate case, the Company has not had any customers out of service for
20 weather-related events. The only customer service outages were caused by the
21 Company repairing main breaks or the having to make a shutdown to tie-in a new water
22 main. The Company's use of new technology, such as the Hydro-Vac and the purchase
of equipment that allows the installation of a valve without shutting down the main, are

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1 just two examples of the Company's efforts to minimize the amount of time customers
2 may be without service.

X. Capital Additions

3
4
5 **Q. Please discuss the Company's capital additions through the end of the FPFTY.**

6 A. The Company projects plant inservice will increase by \$26.8 million in 2018 (FTY) and
7 \$41.6 million in 2019 (FPFTY). See exhibit **SWPA Exhibit No. JDH-1** for details by Plant
8 account.

9 The Company's capital additions through the end of the FPFTY are also discussed in
10 SWPA's answers to the minimum filing requirements, Rate Base, Question Nos. 12 and
11 13. In addition, in her testimony concerning rate base, Company Witness Constance E.
12 Heppenstall discusses Exhibits JJS-1, JJS-2 and JJS-3, concerning the Company's
13 Original Cost Measure of Value or Rate Base, as of December 31, 2017, 2018 and 2019.

14
15 **Q. How many individual projects are over \$1,000,000?**

16 A. There are four projects budgeted over \$1,000,000 exclusive of blanket project, as follows:

- 17 • Sixth Street Water Treatment Intake at Rockville and Bloomsburg Plant -
18 \$3,000,000;
- 19 • Route 15 main extension to serve customers in Montour and Cooper Townships -
20 \$8,500,000;
- 21 • New Administrative Office Building - \$2,100,000; and,
- 22 • Mechanicsburg Transmission Main Replacement - \$1,000,000.

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1 **Q. What is the status of the four projects to date?**

2 A. The Company has awarded the Rockville Intake to Gannet Fleming Engineers. To date,
3 they have completed about 30 percent of the design. The Company has engaged GHD
4 engineers to design the Route 11 Main and they are actively designing the project. ECI
5 has been retained to design the new Administrative building and they have completed
6 their preliminary design and are now working on a final design for bid. The
7 Mechanicsburg transmission main replacement is scheduled to commence with design in
8 late 2018.

9
10 **Q. Did SWPA submit a Long Term Infrastructure Improvement Plan?**

11 A. Yes, the Company filed its first LTIIP in February 17, 2017 and it was subsequently
12 approved by the Commission on June 14, 2017 at Docket No. P-2017-2589724.

13
14 **Q. Did the Company file its Annual Asset Optimization Plan (“AAOP”) and, if so, what
15 in summary did the AAOP conclude?**

16 A. Yes, the Company filed its AAOP on April 6, 2018 and it demonstrated that the Company
17 outperformed its first year projected plan. The LTIIP projected that the Company would
18 install 14.6 miles of main and invest \$15.97 million in main replacements in 2017. The
19 Company actually installed 17.8 miles of main at a cost of \$18.372 million.

20
21 **A. Does SWPA anticipate any material deviations from its LTIIP in the future year and
22 projected future test year?**

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1 A. No. The Company's capital investment for infrastructure improvements in both the future
2 test year and the fully projected future test year are aligned with the LTIP approved by
3 the Commission.

4
5 **Q. The 2015 Base Rate Case Settlement included the following stipulation:**

6 *In UWPA's next base rate proceeding, UWPA shall prepare and submit a*
7 *comparison of its actual expenditures and rate base additions for the twelve*
8 *months ending October 31, 2016, to its projections in this case.*

9 **Please provide the comparison.**

10 A. UWPA Exhibit No. JDH-1 in the Company's 2015 rate case filing (Docket No. R-2015-
11 2462723) estimated that the Company would spend a net dollar amount of \$68.1 million
12 through the FPFTY. Included in the \$68.1 million was \$1.4 million earmarked for IT
13 projects. As a result of the Commission's approval of the new SUEZ Water Management
14 & Services Inc. ("SM&S") Affiliate agreement, which occurred on January 20, 2017 at
15 Docket No. G-2016-2546454, the Company now includes the Corporate IT projects as
16 shared costs under the SM&S allocated costs. Therefore the projected amount to be
17 spent through the FPFTY is \$66.7 million after subtracting the \$1.4 million for IT projects.
18 The Company's actual capital investments through the FPFTY were \$68.3 million which
19 was \$1.6 million greater than the Company's original FPFTY estimate of \$66.7 million.

20 Included in that estimate were two major projects: the Bloomsburg Treatment
21 Plant, \$34.9 million, and the Shavertown Manganese Removal Plant, \$2.4 million. Main
22 replacement related to DSIC was estimated at \$10.2 million. The Bloomsburg Plant's

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1 actual dollars booked through FPFTY was \$34.7 million, the Shavertown project was \$2.8
2 million and there was \$12.2 Million invested on DSIC related main replacements.

3 Other material changes were as follow:

- 4 • Bloomsburg Reservoir Cover projected at \$0.567 Million was redesigned and
5 a 1.8 million gallon concrete tank was installed in lieu of cover the existing
6 reservoir. The new tank, which cost \$2.3 million, did not get placed in service
7 till December 2016 (two months after the FPFTY) and therefore was not
8 included in the Company's' reported FPFTY figure \$68.3 million.
- 9 • The Rabold Chlorine project projected at \$0.352 million was delayed due to
10 permitting issues and is now in service.
- The Strites Road and Powder Horn main projects forecasted at \$0.737 and
12 \$0.226 million were delayed due to further engineering design. The two
13 projects were completed and placed in service May 2017 for \$0.478 and \$0.134
14 million.
- 15 • The Rockville Intake Improvements forecasted at \$0.556 million were not
16 completed due to a total redesign of the project based on an engineering study.
17 It is currently under design and is projected at \$2.6 million.

18
19 **XI. Route 15 Service Territory Expansion**

20 **Q. Please describe in more detail SWPA's Route 15 service territory expansion.**

21 A. On March 1, 2018, the Company received a certificate of public convenience from the
22 Commission to serve customers along Route 15 in Montour and Cooper Townships. The
23 expanded franchise area encompasses 1,503 acres.

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1

2 **Q. Does SWPA anticipate any substantial customer growth in the new territory**
3 **through the end of the FPFTY?**

4 A. Yes, the Company has received commitments from several businesses and from both
5 Montour and Cooper Townships regarding water service.

6

7 **Q. Please describe the investment required for the service territory expansion and the**
8 **timing of such investment.**

9 A. To provide water service to the expanded service territory, the Company will install a
10 sixteen (16) inch water main approximately six (6) miles in length. In addition to the water
11 main extension, the Company will install a booster station to ensure adequate pressure
12 and fire flows.

13

14 **Q. How will existing SWPA customers benefit from this territory expansion?**

15 A. The main extension serving the new territory will provide for new customer growth beyond
16 the initial requests received by the Company for new service. This ability to promote
17 growth is always a benefit to the existing customer base. Over time, the costs of service
18 can be spread across a larger customer base, which is the underlying logic behind the
19 Commission's policy in favor of single-tariff pricing. While SWPA's existing customers
20 will be helping to fund new facilities in the expanded territory, the new customers will be
21 helping to fund projects throughout the remainder of SWPA's service territory in the future
22 – particularly as facilities age in the existing service territory.

23

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1 **Q. What are the public benefits of the service territory expansion?**

2 A. Currently, there is no public water system that serves this area. SWPA's provision of
3 water service to this area will allow the area to have a reliable and sustainable water
4 system for both domestic and fire protection. In addition, it will provide a regional water
5 system strategy as opposed to a number of small "subdivision water systems" which
6 many times end up as troubled water systems that both the Commission and the DEP
7 look to companies like SUEZ to take over. Finally, the expansion will also promote
8 economic growth for the area being served.

9

10 **Q. Is there a relationship between the service territory expansion and the Mahoning
11 Township acquisition?**

12 A. No, the territory expansion stands alone on its own merits. However, there may be an
13 opportunity in the future to install an interconnection with Mahoning Township which could
14 provide benefits to both the customers in Mahoning Township and SWPA's existing
15 customers. Both the Mahoning Township acquisition and the service territory expansion
16 further the Commission's policy goal of regionalization and consolidation of water service
17 in the Commonwealth.

18

19 **XII. Mahoning Township Water System Acquisition**

20 **Q. Please describe SWPA's anticipated acquisition of Mahoning Township's water
21 system.**

22 A. The Company was the successful bidder in the acquisition of Mahoning Township's water
23 and wastewater systems. The systems serve approximately 1,200 water customers and

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1 1,200 wastewater customers. The water system assets include approximately twenty
2 three (23) miles of main and the associated appurtenances -- hydrants, services, meters
3 and valves; three (3) storage tanks; and four (4) pumping stations. The wastewater
4 system consists of approximately twenty six (26) miles of collection mains and the
5 associated appurtenances (manholes, service, etc.), and two pump stations. The
6 Company is making no claims related to the wastewater system acquisition in this rate
7 case.

8
9 **Q. Is Section 1329 of the Pennsylvania Public Utility Code being utilized for the**
10 **acquisition?**

11 A. Yes.

12
13 **Q. What is the acquisition purchase price under the Asset Purchase Agreement?**

14 A. The Company's purchase price, under the Asset Purchase Agreement executed on April
15 20, 2018, for both the water and wastewater systems is \$9.5 million.

16
17 **Q. What rate base is SWPA claiming with regard to the acquisition?**

18 A. The Company has included 60 percent of the purchase price in this filing's rate base.

19
20 **Q. How did SWPA allocate the claimed rate base between the water and wastewater**
21 **systems?**

22 A. Since the independent appraisals under Section 1329 are not yet complete, the Company
23 used several factors to determine the amount claimed for the water assets in this case.

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1 The Company anticipates the appraisals to be completed by the end of May and reserves
2 the right to adjust its rate base accordingly through the submission of supplemental
3 testimony.

4
5 **Q. How do you know that the Mahoning Township acquisition will close within the**
6 **FPFTY?**

7 A. The Company intends to make its Section 1329 acquisition application filing within the
8 second quarter of 2018. Then, according to the mandate of Section 1329, the
9 Commission has six months in which to take final action on the application. Assuming
10 Commission approval of the application, SUEZ will then have approximately one year to
11 close within the FPFTY.

12
13 **Q. How do you know what rate base the Commission will approve for the acquisition**
14 **if the Section 1329 application proceeding has not yet concluded?**

15 A. At this time, we do not know what rate base will be approved by the Commission. Section
16 1329 states that the rate base will be lower of the stated purchase price or the average
17 of the appraisals performed by the two Utility Valuation Experts. For purposes of this
18 filing, we have simply used the purchase price for the rate base claim.

19
20 **Q. How do you intend to adjust SWPA's claimed rate base for the acquisition if the**
21 **Commission decides that it is something other than what SWPA has claimed?**

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1 A. SWPA will file supplemental testimony prior to the close of the evidentiary record and
2 adjust its claims appropriately based on the Commission's determination of the Mahoning
3 Township rate base.

4
5 **Q. Please describe the anticipated O&M expenses associated with the acquired
6 system.**

7 A. The O&M expenses included in the filing include the cost of: purchased water from
8 Danville, labor expense for the one employee to be retained by SUEZ, and other operating
9 costs such as energy, chemicals, etc.

10
11 **Q. What rates are being proposed in this rate filing for Mahoning Township-area
12 customers?**

13 A. The rates for the Mahoning Township customers will be the same rates that are approved
14 by this filing for SWPA's other customers. I note, however, that pursuant to the terms of
15 the Asset Purchase Agreement, Mahoning Township customers will be charged
16 Mahoning Township's existing rates until SWPA's next base rate case if the Mahoning
17 Township acquisition is not included in this base rate case. Accordingly, inclusion of the
18 Mahoning Township acquisition in this proceeding is in the public interest because it
19 moves the Mahoning Township customers closer to their true cost of service more quickly.

20
21 **Q. Will the Mahoning Township-area customers be subject to other charges, rules,
22 and regulations provided for under SWPA's tariff?**

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1 A. Yes, as there will be no distinction between the Mahoning Township–area customers and
2 the existing SWPA customers.

3

4 **Q. Is SWPA proposing to spread any wastewater costs to its water customers under**
5 **Act 11 of 2012?**

6 A. No.

7

8 **XIII. Changes to Tariff Rules and Regulations**

9 **Q. Please discuss the proposed changes to the Company’s tariff Rules and**
10 **Regulations.**

11 A. The Company is proposing three significant changes to its tariff in addition to a number
12 of clean-up changes. The three significant changes are:

13 1. The Company is revising the Large Industrial tariff to clarify when the large
14 industrial rate applies. The current language is ambiguous and difficult to
15 administer. Currently, to be eligible for the Large Industrial rate, a customer
16 must maintain a demand over seven million gallons per month for the preceding
17 12 consecutive billing periods.

18 2. Standby Rate – The Company is proposing language to capture a standby rate
19 for any new customer that has an alternative supply source or an existing customer
20 that purchases water from the Company only on an emergency basis

21 3. Private Fire Meter Charge – This tariff change is intended to convert private fire
22 service customers to a tariff meter rate when it is discovered that the customer
is using water for other purposes than fighting fires.

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These changes as well as the Company’s proposed rates can be found in Minimum Filing Requirement II.03.

XIV. Customer Notification of New Rates

Q. How will the Company inform customers of the base rate case filing and the need to increase rates?

A. In compliance with the Commission’s notice requirements, the Company will inform customers of our rate filing by publishing the required notices in the local newspapers, posting notice at Company offices where payment is accepted, and sending each of its customers a bill insert. The text of the bill insert is attached to this testimony as **SWPA Exhibit No. JDH-2**. For those customers currently enrolled in e-billing, they will receive a pdf file in their e-billing informing them of the increase. New customers who enroll after the filing is made will be informed of the filing in accordance with the Commission’s regulations. We will also provide information about our rate request by way of a letter that will be mailed to selected public officials who represent districts that include areas that we serve. Internally, and in addition to our in-state call center staff, all Company employees will be briefed on the rate filing and the drivers for the increase. They will be provided with the name of a SWPA contact in order to elevate any customer questions if there are customer inquiries they are unable to fully answer. Field employees will be provided with a customer handout that includes facts about our rate filing. These handouts can be given to customers that have questions. A “Statement of Reasons” for the rate increase will be provided to any customer upon request. Finally, a news release,

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1 describing the rate request and the reasons for the request, will be distributed to the news
2 media to ensure that the facts of the case are accurately described. This news release
3 will also be posted on SWPA's website.

XV. Other Witnesses

4
5
6 **Q. Please identify the other SWPA witnesses being presented in SWPA's direct case
7 and their subject matter areas.**

8 A. The other SWPA witnesses in this case are listed below:

- 9 • Jim Cagle, SUEZ VP of Rates and Regulatory Affairs – Tax Impact
- 10 • Connie Heppenstall, Project Manager, Gannett Fleming Valuation and Rate Consultants
11 LLC,– Income Statement, Operating Revenue, and Expense Adjustment
- 12 • Harold Walker, Manager – Financial Studies, Gannett Fleming Valuation and Rates –
13 Lead Lag Study and Cash Working Capital
- 14 • Paul Herbert, President, Gannett Fleming Valuation and Rate Consultants LLC - Cost of
15 Service Allocation & Customer Rate Design
- 16 • John Spanos, Vice President, Gannett Fleming Valuation and Rate Consultants LLC-
17 Rate Base & Depreciation Expense
- 18 • Dylan W. D'Ascendis, Scott Madden - Rate of Return

19
20 **Q. Does this conclude your direct testimony?**

21 A. Yes. I reserve the right to supplement my testimony as additional issues arise during the
22 course of this proceeding. Thank you.

23

SUMMARY OF PLANT IN SERVICE ACTIVITY FOR THE YEARS ENDED DECEMBER 31, 2018 AND DECEMBER 31, 2019

ACCOUNT (1)	2018					2019				
	BALANCE AS OF 12/31/2017 (2)	ADDITIONS (3)	RETIREMENTS (4)	TRANSFERS, ADJUSTMENTS AND ACQUISITIONS (5)	BALANCE AS OF 12/31/2018 (6)	ADDITIONS (7)	RETIREMENTS (8)	TRANSFERS, ADJUSTMENTS AND ACQUISITIONS (9)	BALANCE AS OF 12/31/2019 (10)	
301 00 ORGANIZATION	66,399 00				66,399 00				66,399 00	
302 00 FRANCHISES AND CONSENTS	64,265 56				64,265 56				64,265 56	
303 00 MISCELLANEOUS INTANGIBLE PLANT	4,366,092 40	56,255 90		6,750 71	4,429,099 01				4,429,099 01	
304 20 PUMPING STRUCTURES	3,721,078 15				3,721,078 15				3,721,078 15	
304 30 WATER TREATMENT PLANT STRUCTURES	19,476,430 74			5,625 59	19,482,056 33				19,482,056 33	
304 40 TRANSMISSION AND DISTRIBUTION STRUCTURES	282,963 06			136,308 05	419,271 11				419,271 11	
304 51 OFFICE STRUCTURES	9,765,842 65	189,019 83	20,800 00		9,934,062 48	231,906 33	20,800 00		10,145,168 81	
304 52 STORES, SHOP AND GARAGE STRUCTURES	1,570,598 14	29,253 05	36,400 00	78,758 26	1,642,209 45	2,730,421 24	36,400 00		4,336,230 69	
304 53 MISCELLANEOUS STRUCTURES	352,038 57	6,750 70	7,800 00		350,989 27	8,282 35	7,800 00		351,471 62	
305 00 COLLECTING AND IMPOUNDING RESERVOIRS	434,632 39				434,632 39				434,632 39	
306 00 LAKE, RIVER AND OTHER INTAKES	3,364,843 60				3,364,843 60	3,232,332 84	90,000 00		6,507,176 44	
307 00 WELLS AND SPRINGS	1,028,041 81				1,028,041 81				1,028,041 81	
308 00 INFILTRATION GALLERIES AND TUNNELS	13,358 04				13,358 04				13,358 04	
311 20 ELECTRIC PUMPING EQUIPMENT	14,091,239 53	871,966 46	90,000 00		14,873,205 99	1,628,866 07	195,000 00		16,307,072 06	
311 30 OIL ENGINE PUMPING EQUIPMENT	314,155 59				314,155 59				314,155 59	
320 10 STRUCTURES AND IMPROVEMENTS	37,509,056 38	101,260 62	25,000 00		37,585,317 00	662,589 58	85,000 00		38,162,906 58	
320 20 PAINTING	447,524 82				447,524 82				447,524 82	
320 30 CHEMICAL EQUIPMENT	6,563,931 98	225,023 60	50,000 00		6,738,955 58	1,822,121 36	125,000 00		8,436,076 94	
330 00 DISTRIBUTION RESERVOIRS AND STANDPIPES	9,806,864 93	1,406,397 52	100,000 00		11,568,980 25	2,319,063 54	75,000 00		13,813,043 79	
331 00 TRANSMISSION AND DISTRIBUTION MAINS	143,623,963 03	15,768,529 08	280,000 00	4,964,309 87	164,076,801 98	28,695,650 49	680,000 00		192,092,452 47	
333 00 SERVICES	39,198,130 39	659,319 16	22,000 00	456,347 87	40,291,797 42	750,934 88	22,000 00		41,020,732 30	
334 00 METERS	18,835,239 43	1,313,012 74	70,000 00	202,521 24	20,280,773 41	1,242,355 47	20,000 00		21,503,128 88	
335 00 HYDRANTS	7,696,446 42	81,008 50	5,000 00	241,847 49	8,014,302 41	99,388 42	5,000 00		8,108,690 83	
339 00 OTHER PLANT AND MISCELLANEOUS EQUIPMENT	539,255 49				539,255 49				539,255 49	
340 10 COMPUTERS AND SOFTWARE	3,461,144 25		162,368 14		3,298,776 11		652,595 43		2,646,180 68	
340 11 SOFTWARE - LARGE	3,665,579 00				3,665,579 00				3,665,579 00	
340 20 FURNITURE	659,446 10				659,446 10				659,446 10	
341 00 TRANSPORTATION EQUIPMENT - TRUCKS	1,057 45				1,057 45				1,057 45	
343 10 SHOP AND GARAGE EQUIPMENT	770,429 12	370,163 82			1,140,592 94				1,140,592 94	
343 20 TOOLS AND WORK EQUIPMENT	2,070,505 75	108,011 33	114,315 57		2,064,201 51	132,517 92	11,201 43		2,185,518 00	
344 00 LABORATORY EQUIPMENT	140,443 25		11,163 54		129,279 71		1,912 00		127,367 71	
346 00 COMMUNICATION EQUIPMENT	6,834,027 66	198,020 77	106,088 56		6,925,959 87	242,949 52	95,901 80		7,073,007 59	
347 00 MISCELLANEOUS EQUIPMENT	147,854 10				147,854 10				147,854 10	
TOTAL WATER PLANT	340,882,878.78	21,383,993.08	1,100,935.81	6,548,186.88	367,714,122.93	43,799,380.01	2,123,610.66	0.00	409,389,892.28	

NOTICE OF PROPOSED RATE CHANGES

To Our Customers

SUEZ Water Pennsylvania Inc. (SUEZ) has filed a request with the Pennsylvania Public Utility Commission (PUC) to increase your rates for water service as of June 29, 2018. A full investigation of this request could delay the change. This notice describes the company's rate request, the PUC's role, and what actions you can take.

Rate Increase

SUEZ has requested an overall increase of \$6.2 million per year. The \$6.2 million increase does not include the current surcharges assessed to the customer. Since the last rate increase, the company will have invested over \$90 million to enhance service reliability, water quality and fire protection.

If the company's entire request is approved, the total bill for a residential customer using an average of 3,500 gallons of water per month would increase from \$43.94 to \$48.85 or by 11.2 percent

The total bill for a commercial customer using 75,000 gallons of water per month would increase from \$605.23 to \$703.36 or by 16.2 percent.

The total bill for an industrial customer using 100,000 gallons of water per month would increase from \$1,000.99 to \$1,171.00 or by 17 percent.

To find out your customer class or how the requested increase may affect your water bill, contact SUEZ toll-free at 888-299-8972 or 717-564-3662. The rates requested by the company may be found in Supplement No. 53 Water Tariff PA P.U.C. No. 7, filed with the PUC. You may examine the material filed with the PUC, which explains the requested increase and the reasons for it. A copy of this material is kept at the main office of SUEZ, located at 4211 East Park Circle, Harrisburg, PA 17111. Upon request, the company will send you the Statement of Reasons for Supplement No. 53, explaining why the rate increase has been requested.

PUC Role

The state agency which approves rates for regulated public utilities is the PUC. The PUC will examine the requested rate increase and can prevent existing rates from changing until it investigates and/or holds hearings on the request. The company must prove that the requested rates are reasonable. After examining the evidence, the PUC may grant all, some, or none of the request or may reduce existing rates.

The PUC may change the amount of the rate increase or decrease requested by the utility for each customer class. As a result, the rate charged to you may be different than the rate requested by the company and shown above.

Actions You Can Take

There are three ways to challenge the company's request to change rates:

1. You can file a formal complaint. If you want a hearing before a PUC judge, you must file a formal complaint. By filing a formal complaint, you assure yourself the opportunity to take part in hearings about the rate increase request. All complaints should be filed with the PUC before June 26, 2018. If no formal complaints are filed, the PUC may grant all, some or none of the request without holding a hearing before a PUC judge.
2. You can send a letter telling why you object to the requested rate increase. Sometimes there is information in these letters that makes the PUC aware of problems with the company's service or management. This information can be helpful when the PUC investigates the rate request. Send your letter to the Pennsylvania Public Utility Commission, Post Office Box 3265, Harrisburg, PA 17105-3265.
3. You can attend or be a witness at a public input hearing. Public input hearings are held if the PUC opens an investigation of the company's rate increase and if a large number of customers are interested in the case. At these hearings, you will have the opportunity to present your views in person to the PUC judge hearing the case and company representatives. All testimony given under oath becomes part of the official rate case record. The hearings are held in the company's service area. For more information, call the PUC at 800-782-1110. You may leave your name and address so you can be notified of any public input hearings that may be scheduled in the case.

PENNSYLVANIA PUBLIC UTILITY COMMISSION

v.

SUEZ WATER PENNSYLVANIA INC.

Docket No. R-2018-3000834

Rebuttal Testimony

of

John D. Hollenbach, General Manager and Vice President
SUEZ Water Pennsylvania Inc.

Regarding

Operations and Capital Additions

August 17, 2018

INTRODUCTION AND PURPOSE

Q. PLEASE STATE YOUR NAME, OCCUPATION AND BUSINESS ADDRESS.

A. My name is John D. Hollenbach. My business address is 4211 East Park Circle, Harrisburg, PA 17111.

Q. ARE YOU THE SAME JOHN D. HOLLENBACH WHO PREVIOUSLY SUBMITTED PREPARED DIRECT TESTIMONY IN THIS PROCEEDING?

A. Yes.

Q. WHAT IS THE PURPOSE OF YOUR REBUTTAL TESTIMONY?

A. My rebuttal testimony responds to the direct testimony of Office of Consumer Advocate (“OCA”) witnesses Lafayette K. Morgan, Jr., Jerome D. Mierzwa, and Terry L. Fought. In addition, my rebuttal testimony responds to the testimony of several witnesses at the public input hearings held on July 11, 2018.

REBUTTAL OF OCA WITNESSES

OCA WITNESS LAFAYETTE K. MORGAN, JR.

Q. ON PAGES 10-14 OF HIS DIRECT TESTIMONY, MR. MORGAN DISCUSSES SWPA’S ACQUISITION OF THE MAHONING TOWNSHIP WATER SYSTEM. PLEASE PROVIDE AN UPDATE ON THE STATUS OF THIS ACQUISITION.

A. SUEZ Water Pennsylvania Inc. (“SWPA”) has filed its application to acquire the water distribution system (“Water System”) of Mahoning Township (“Mahoning”). This application was assigned Docket No. A-2018-3003519 and the filing was accepted by the Pennsylvania Public Utility Commission (“Commission”) by Secretarial Letter dated August 8, 2018. As a result, the Commission must issue a decision on the Application on or before February 8, 2019.

SWPA has also filed its application to acquire the wastewater collection and conveyance system (“Wastewater System”) of Mahoning. This application was assigned Docket No. A-2018-3003517 and the filing was accepted by the Commission by Secretarial Letter dated August 8, 2018. As a result, the Commission must issue a decision on the Application on or before February 8, 2019.

Nevertheless, due to the concerns expressed in this proceeding by the Office of Consumer Advocate and the Bureau of Investigation and Enforcement, SWPA is removing any claim for the Mahoning Water System from this case. The resulting adjustments will be discussed in the rebuttal testimony of other witnesses, particularly Constance E. Heppenstall.

Q. WITH REGARD TO THE ROUTE 15 SERVICE TERRITORY EXTENSION, MR. MORGAN EXPRESSES DOUBT THAT THE EXTENSION WILL BE IN SERVICE BY DECEMBER 31, 2019. PLEASE PROVIDE AN UPDATE ON THE STATUS OF THIS PROJECT.

A. Mr. Morgan’s testimony’s only basis for his conclusion that the project will not go in service as proposed is that the project could slip. The design will be completed by August,

2018 as originally projected in my Direct Testimony. Bids will be solicited in September and awarded in October. Construction will commence once all permits are received. Therefore the project is still on schedule to be in service as of December 31, 2019.

OCA WITNESS JEROME D. MIERZWA

Q. ON PAGE 13 OF HIS TESTIMONY, MR. MIERZWA RECOMMENDS THAT SWPA BE REQUIRED TO SUBMIT TWO SEPARATE COST OF SERVICE STUDIES WHEN IT FILES ITS NEXT BASE RATE CASE. ONE SHOULD REFLECT THE COSTS AND REVENUES ASSOCIATED WITH SERVING MAHONING AND THE OTHER SHOULD EXCLUDE ALL COSTS AND REVENUES ASSOCIATED WITH SERVING MAHONING. PLEASE RESPOND.

A. The Company has withdrawn the acquisition of the Mahoning Township Water System from this filing and therefore this recommendation should be tabled and addressed in the Company's next base rate filing.

OCA WITNESS TERRY L. FOUGHT

Q. OCA WITNESS TERRY L. FOUGHT RECOMMENDED, ON PAGE 2 OF HIS DIRECT TESTIMONY, THAT THE COMPANY MAKE IT EASIER FOR CONSUMERS TO FIND INFORMATION PERTAINING TO SERVICE QUALITY ON THE COMPANY'S SOCIAL MEDIA. DID THE COMPANY REQUEST CLARIFICATION AS TO WHAT MR. FOUGHT IS RECOMMENDING?

A. Yes. Please see **Exhibit JDH-1-R**.

Q. DOES THE COMPANY INTEND TO MAKE ANY CHANGES TO ITS SOCIAL MEDIA OR OTHERWISE MAKE IT EASIER FOR CONSUMERS TO FIND INFORMATION PERTAINING TO SERVICE QUALITY?

A. The Company recognizes that social media is a valuable means of communicating with its customers and will continue to enhance its use of Facebook, twitter, blogs, etc. In addition, the Company will continue to use other communication tools such as its website, phone messages, bill stuffers, quarterly newsletters, direct mailings, its four Customer Advisory Councils, and its Notify system (which can call, text, and e-mail to a specific set of customers).

RESPONSE TO TESTIMONY OF WITNESSES AT PUBLIC INPUT HEARING

Q. AT THE PUBLIC INPUT HEARING, KYLE MILLER, A MEMBER OF THE MECHANICSBURG BOROUGH COUNCIL, TESTIFIED REGARDING SWPA'S CONSTRUCTION AND RESTORATION IN REGARD TO THE COMPANY'S INFRASTRUCTURE PROJECT IN MECHANICSBURG. WHAT IS THE COMPANY'S RESPONSE TO MR. MILLER'S TESTIMONY?

A. First, it should be noted that there is no record of Mr. Miller contacting the Company with any concerns either as a customer or as a Borough Council Member prior to his appearance at the public hearing. The project Mr. Miller referenced at the public hearing is Phase I of a project costing approximately \$5.7 million to replace 5.2 miles of main within the

Borough. The Company has been, and is in compliance with all the Borough and State permits. One of Mr. Miller's issues concerned the Company's communication with both the Borough and with SWPA's customers. In regards to communicating with the Borough, the Company was in constant communication with Mr. Roger Ciecierski, the Borough Manager, giving him updates and addressing his issues. Mr. Ciecierski is also a member of the Mechanicsburg Customer Advisory Committee which meets quarterly and provides updates on Company projects. The Company has proposed a few dates to meet with Mr. Ciecierski to resolve any outstanding issues. In regards to customer communications, the Company acknowledges that on infrastructure projects of long duration, like the Phase I Mechanicsburg project, it can provide more updates. Therefore it is developing a customer communication plan for future projects.

Q. AT THE PUBLIC INPUT HEARING, DOUG HASSENBEIN ALLEGED THAT HE RECEIVED DISCOLORED WATER ON VARIOUS OCCASIONS. DID YOU INVESTIGATE HIS ALLEGATIONS?

A. Yes, I did. First, I would note that Mr. Hassenbein is not a customer of SWPA; he resides in an apartment complex, and the owner of the complex is the customer of SWPA. It should be noted that the apartment complex has a lengthy galvanized service line. Maintenance of this service line is the customer's responsibility.

Mr. Hassenbein has called the Company on several occasions regarding intermittent discolored water. Each time the Company has responded to Mr. Hassenbein via direct calls, e-mails and social media. In regards to the cause of the temporary discolored water, it is difficult to determine the exact cause. Some instances can be attributed to the condition

of the apartment complex's two inch galvanized service line which has experienced several breaks. Other discolored water occurrences can be attributed to Company main breaks and/or authorized and unauthorized water use. Finally, the Company is currently having ongoing dialogue with Mr. Hassenbein with an end goal of a mutual agreement.

Q. FOLLOWING THE PUBLIC INPUT HEARING, DID THE COMPANY TAKE STEPS TO INVESTIGATE ANY OF THE OTHER COMPLAINTS OF WITNESSES?

A. Yes the Company has investigated the following complaints:

- Cardinal Drive. This customer filed a letter with the Commission protesting the rate case. In the letter, he alleged that he had low water pressure and received discolored water. There are no Company records that indicate this customer has lodged a complaint, nor is there any other indication that the issues this customer has raised are experienced by his neighbor. In response to the allegations about low pressure, the Company placed a pressure recording device on two hydrants near the customer's residence. The results compiled over a period of seven days indicated the average pressures were in the 70 psi range, which is 45 psi over the minimum regulatory requirement of 25 psi.
- Cherrington Condo - A resident of Cherrington Condo, located in Susquehanna Township, contacted the OCA in July, 2018 via social media concerning discolored water. The individual also contacted the media. The customer that complained about discolored water is not a SUEZ customer but is a tenant of the complex. The Company

investigated the complaint and determined the cause of the discolored water was confined to the complex and not a system-wide problem.

- Cheryl Guinther provided testimony at the public hearing expressing her concern about the amount of the proposed increase. I personally called Ms. Guinther to explain the Company's position. At the end of the call she thanked me for putting a face to the Company and expressed her appreciation for me reaching out to her.

Q. FINALLY, ON PAGE 2 OF HIS DIRECT TESTIMONY, OCA WITNESS TERRY L. FOUGHT RECOMMENDED THAT THE COMPANY RESPOND TO AND TAKE REASONABLE ACTION TO RESOLVE THE CUSTOMER COMPLAINTS RAISED AT THE PUBLIC INPUT HEARINGS. PLEASE RESPOND.

A. With respect to those persons who expressed concerns about the quality of the Company's service, SWPA has investigated the complaints (as discussed above) and believes it has sufficiently addressed those issues.

CONCLUSION

Q. DOES THIS CONCLUDE YOUR REBUTTAL TESTIMONY?

A. Yes, but I reserve the right to supplement my testimony as additional issues arise in this litigation.



**Pa. P.U.C. v. Suez Water Pennsylvania Inc.
Docket No. R-2018-3000834**

**Response of the Office of Consumer Advocate to
Interrogatories of Suez Water Pennsylvania Inc.
Set I**

OCA-I-12 Reference page 14 of Mr. Fought's Direct Testimony, in which Mr. Fought recommends that SUEZ Water Pennsylvania Inc. make it easier for consumers to find information pertaining to service quality on the company's social media. Please explain in detail the additional steps that Mr. Fought recommends that the company take to inform customers about service quality via social media.

Response:

On page 14 of his testimony, Mr. Fought recommended that the Company make it easier for consumers, including non-customers, to find information pertaining to service quality... on the Company's social media." Mr. Fought did not recommend specific steps to accomplish this. It is the OCA's view that it is the Company's responsibility to design and manage its outreach to be useful and useable to consumers.

Responsible Witness: Terry L. Fought

VERIFICATION

I, Constance Heppner, hereby state that the facts set forth above are true and correct to the best of my knowledge, information and belief and that I expect to be able to prove the same at a hearing held in this matter. I understand that the statements herein are made subject to the penalties of 18 Pa. C.S. § 4904 (relating to unsworn falsification to authorities).

Date: October 10, 2018

Constance Heppner

SWPA STATEMENT NO. 2

BEFORE THE
PENNSYLVANIA PUBLIC UTILITY COMMISSION

Docket No. R-2018-3000834

PREPARED DIRECT TESTIMONY

OF

CONSTANCE E. HEPPENSTALL, PROJECT MANAGER

GANNETT FLEMING
VALUATION AND RATE CONSULTANTS, LLC

REGARDING INCOME STATEMENT, OPERATING REVENUE AND EXPENSE
ADJUSTMENTS

April 30, 2018

SWPA STATEMENT NO. 2
DIRECT TESTIMONY OF CONSTANCE E. HEPPENSTALL
REGARDING INCOME STATEMENT, OPERATING REVENUE
AND EXPENSE ADJUSTMENTS

1 **Q. State your name and business address.**

2 A. My name is Constance E. Heppenstall. My business address is 1010 Adams
3 Avenue, Audubon, Pennsylvania.

4

5 **Q. By whom are you employed?**

6 A. I am employed by Gannett Fleming Valuation and Rate Consultants, LLC
7 ("Gannett Fleming").

8

9 **Q. Please state your position with Gannett Fleming, and briefly describe your
10 general duties and responsibilities.**

11 A. My title is Project Manager, Rate Studies. My duties and responsibilities include
12 the preparation of accounting and financial data for revenue requirements, the
13 allocation of cost of service to customer classifications, and the design of customer
14 rates in support of public utility rate filings.

15

16 **Q. Have you presented testimony in rate proceedings before a regulatory
17 agency?**

18 A. Yes. I have testified before the Pennsylvania Public Utility Commission, the
19 Missouri Public Service Commission, the Kentucky Public Service Commission,
20 the Arizona Corporation Commission, the Hawaii Public Utilities Commission and
21 the Virginia State Corporation Commission. A full list of the cases in which I have
22 testified is attached as Appendix A.

23

SWPA STATEMENT NO. 2
DIRECT TESTIMONY OF CONSTANCE E. HEPPENSTALL
REGARDING INCOME STATEMENT, OPERATING REVENUE
AND EXPENSE ADJUSTMENTS

1 **Q What is your educational background?**

2 A. I have a Bachelor of Arts Degree in Economics from the University of Virginia,
3 Charlottesville, Virginia and a Master's of Science in Industrial Administration from
4 the Carnegie-Mellon University's Tepper School of Business, Pittsburgh,
5 Pennsylvania.

6
7 **Q. Would you please describe your professional affiliations?**

8 A. I am a member of the American Water Works Association and the National
9 Association of Water Companies. I am also a member of the Pennsylvania
10 Municipal Authorities Association.

11
12 **Q. Briefly describe your work experience.**

13 A. I joined the Valuation and Rates Division of Gannett Fleming, LLC (formerly
14 Gannett Fleming, Inc.) in August 2006, as a Rate Analyst. Prior to my employment
15 at Gannett Fleming, Inc., I was a Vice President of PriMuni, LLP where I developed
16 financial analyses to test proprietary software in order to ensure its pricing
17 accuracy in accordance with securities industry conventions. From 1987 to 2001,
18 I was employed by Commonwealth Securities and Investments, Inc. as a public
19 finance professional where I created and implemented financial models for public
20 finance clients in order to create debt structures to meet clients' needs. From 1986
21 to 1987, I was a public finance associate with Mellon Capital Markets.

22

SWPA STATEMENT NO. 2
DIRECT TESTIMONY OF CONSTANCE E. HEPPENSTALL
REGARDING INCOME STATEMENT, OPERATING REVENUE
AND EXPENSE ADJUSTMENTS

1 **Q. What is the purpose of your testimony in this proceeding?**

2 A. The purpose of my testimony is to explain and support the SUEZ Water
3 Pennsylvania Inc. ("SWPA") income statement, pro forma revenue and expense
4 claims based on the Historic Test Year ("HTY"), Future Test Year ("FTY") and Fully
5 Projected Future Test Year ("FPFTY") ending December 31, 2017, 2018 and 2019.

6
7 **Q. Have you prepared exhibits which present and support the SWPA's claims
8 in this proceeding?**

9 A. Yes. Exhibit No. CEH-1 sets forth: SWPA's income statement, revenue and
10 revenue adjustments under present rates for the twelve months ended December
11 31, 2017, 2018, and 2019; SWPA's revenue and revenue adjustments under
12 proposed rates for the twelve months ending December 31, 2019; and a summary
13 of SWPA'S rate base. Exhibit No. CEH-2 sets forth SWPA's operation and
14 maintenance expense, taxes other than income, depreciation and tax adjustments
15 for the Historic, Future and Fully Projected Future Test Years.

16
17 **Q. Please summarize the Company's request in this filing.**

18 A. The Company is requesting \$6,236,405 in additional annual revenue or an
19 increase of 13.2% in total revenue, which includes the roll-in to base rates of the
20 Company's current Distribution System Improvement Charge ("DSIC"). The total
21 change to the Company's base rates is an increase of \$9,348,502 where the DSIC
22 and State Tax Adjustment Surcharge ("STAS") will be reset to zero.

23

SWPA STATEMENT NO. 2
DIRECT TESTIMONY OF CONSTANCE E. HEPPENSTALL
REGARDING INCOME STATEMENT, OPERATING REVENUE
AND EXPENSE ADJUSTMENTS

1 **Q. Please describe Schedule 1 of Exhibit No. CEH-1**

2 Schedule 1 of SWPA Exhibit No. CEH-1 is the Company's income statement which
3 incorporates the information contained in Schedules 2 through 9 as well as Exhibit
4 No. CEH-2.

5 **PRO FORMA RATE BASE**

6 **Q. Please describe Schedule 1.1.**

7 A. Schedule 1.1 summarizes the Company's Original Cost Measure of Value or
8 Rate Base as of December 31, 2017, 2018 and 2019. As stated in the schedule,
9 the Original Cost of Utility Plant in Service and Accumulated Depreciation for
10 each year are derived from Exhibit No. JJS-1, JJS-2 and JJS-3 respectively. The
11 CIAC and Contributions are based on the Company's HTY figures. Additions to
12 CIAC and Contributions for the FTY and FPFTY are included in the totals for
13 Exhibit No. JJS-2 and JJS-3. Deferred Taxes are supported in Statement 3 and
14 Exhibit No. CEH-2 Schedule 34. Materials and Supplies equal the 12-month
15 average of Material and Supplies in the HTY as shown in response to MFR-V-11.
16 Cash Working Capital is supported in Statement 4 and Exhibit No. HW-1.

17 **Q. What is the Company's total Original Cost Measure of Value as of**
18 **December 31, 2019?**

19 A. The Company's total Original Cost Measure of Value as of December 31, 2019 is
20 \$243,448,860.

21

SWPA STATEMENT NO. 2
DIRECT TESTIMONY OF CONSTANCE E. HEPPENSTALL
REGARDING INCOME STATEMENT, OPERATING REVENUE
AND EXPENSE ADJUSTMENTS

PRO FORMA REVENUE ADJUSTMENTS

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Q. Describe the development of pro forma revenues under present and proposed rates.

A. Schedule 4, in Exhibit No. CEH-1 develops the pro forma revenues under present rates. Column 1 equals per books revenue by customer class. Column 3 summarizes the application of present rates to the consumption analysis shown on Schedule 5. Column 4 is the calculated adjustment factor needed to adjust bill analysis revenues from Column 3 to the levels of Column 2. This adjustment factor is used in Schedule 2 and adjusts revenue under proposed rates. Column 5 is equal revenue under present rates after application of the adjustment factor. Column 6 summarizes the application of present rates to the pro forma adjustments in Schedules 5, 7 and 9. Column 7 represents the annualized DSIC revenue based on the current level of 7.5%. Column 8 is the pro forma revenue under present rates, the sum of Columns 5, 6, and 7. Schedule 2 develops the pro forma revenues under proposed rates. Column 1 is the pro forma revenues from present rates derived in Column 8 of Schedule 4. Column 2 is the revenues under proposed rates from the bill analysis in Schedule 2. Column 3 is the adjustment factor from Schedule 4. Column 5 multiplies Column 4 by Column 3 to develop revenues under proposed rates. Column 6 summarizes the application of proposed rates to the pro forma adjustments in Schedules 3, 7 and 9. Column 7 summarizes the total pro forma revenues under proposed rates and is the sum of Columns 5 and 6. Column 8 shows the pro forma proposed increase and Column 9 is the pro forma percentage increase.

SWPA STATEMENT NO. 2
DIRECT TESTIMONY OF CONSTANCE E. HEPPENSTALL
REGARDING INCOME STATEMENT, OPERATING REVENUE
AND EXPENSE ADJUSTMENTS

1

2 **Q. Please explain the revenue adjustments under present rates in Exhibit No.**
3 **CEH-1, Schedules 9, 9.1 and 9.2.**

4 A. Schedule 9 summarizes the adjustments on Schedules 9.1 and 9.2 and calculates
5 revenue related to the adjustments under present and proposed rates.

6 Adjustment 1 on Schedule 9.1 annualizes revenue for customer growth by
7 customer class. Lines 1 thru 11 calculate the revenue associated with the HTY
8 annualized growth. Lines 12 thru 18 calculate the revenue associated with the
9 FTY growth in number of customers. Lines 19 thru 25 calculate the revenue
10 associated with the FPFTY growth in number of customers.

11 Adjustment 2 on Schedule 9.2 calculates the Declining Usage adjustment
12 for the residential and commercial class based on present rates based on the
13 regression analysis in Workpaper CEH-1.1. Line 1 is the number of normalized
14 bills based on the bill analysis on Schedule 6. Line 2 is the actual daily usage per
15 customer (gallons) for the test year. Line 3 is the projected daily usage for 2018,
16 or FTY. Line 4 is the difference between Line 2 and Line 3, or the projected
17 declining usage for the future test year. Line 5 annualizes this difference by
18 multiplying the declining usage in line 5 by the number of bills in line 1. Lines 7-9
19 calculate the revenue impact under present rates for declining usage for the Future
20 Test Year.

21 A similar calculation is done for 2019, the fully projected future test year.
22 Line 10 is the number of normalized bills based on the bill analysis on Schedule 6.
23 Line 11 is the actual daily usage per customer (gallons) for the test year. Line 12

SWPA STATEMENT NO. 2
DIRECT TESTIMONY OF CONSTANCE E. HEPPENSTALL
REGARDING INCOME STATEMENT, OPERATING REVENUE
AND EXPENSE ADJUSTMENTS

1 is the projected daily usage for 2019, or FPPTY. Line 13 is the difference between
2 Line 11 and Line 12, or the projected declining usage for the future test year. Line
3 14 annualizes this difference by multiplying the declining usage in line 14 by the
4 number of bills in line 10. Lines 16-19 calculate the revenue impact under present
5 rates for declining usage for the Fully Projected Future Test Year. See Workpaper
6 CEH-1.1 for the detailed regression analysis.

7 Adjustment 3 on Schedule 9.3 adjusts revenue for the acquisition of the
8 Mahoning Township water system. This adjustment is not reflected in Schedule 9
9 but is included in the calculation of revenues under present and proposed rates on
10 Schedules 5 and 3.

11 An additional adjustment in Schedule 9 for the Large Industrial Class shows
12 the additional revenue due from a large industrial customer which did not meet its
13 annual take or pay requirement. This revenue was not reflected in historic test
14 year revenues.

15
16 **Q. Please describe Schedule 10 of Exhibit No. CEH-1.**

17 A. Schedule 10 in Exhibit No. CEH-1 shows bill comparisons at various usage level
18 for each customer class.

19 **PRO FORMA OPERATION AND MAINTENANCE EXPENSE ADJUSTMENTS**

20 **Q. Please explain the development of the pro forma HTY, FTY and FPPTY**
21 **historic test year operation and maintenance expense shown in Exhibit No.**
22 **CEH-2.**

SWPA STATEMENT NO. 2
DIRECT TESTIMONY OF CONSTANCE E. HEPPENSTALL
REGARDING INCOME STATEMENT, OPERATING REVENUE
AND EXPENSE ADJUSTMENTS

1 A. The pro forma HTY, FTY and FPFTY adjustments are summarized in Exhibit No.
2 CEH-2, Schedule 1. The adjustments are detailed in Schedules 2-29.

3

4 **Q. Please explain the calculation of each adjustment.**

5 A. Adjustment 1 adjusts Labor Expense for the FTY and FPFTY as shown in
6 Workpaper CEH-2.1. The Company is hiring five new employees in 2018 which is
7 reflected in the adjustment

8 Adjustment 2 calculates the Employee Group Health and Life Insurance
9 expense for the FTY and FPFTY. This expense was adjusted to include the five
10 new employees and increases the cost using the inflation factors described in
11 Adjustment 29 for the FTY and FPFTY.

12 Adjustment 3 calculates the Employee Pension Benefits expense for the
13 FTY and FPFTY. This expense was adjusted using the estimated ASC 715-30
14 Net Periodic Pension Cost for the FTY and by the inflation rate for the FPFTY as
15 described in Adjustment 29.

16 Adjustment 4 calculates the Employee PEBOP expense for the FTY and
17 FPFTY. This expense was adjusted using the estimated ASC 715-30 Net Periodic
18 Pension Cost for the FTY and by the inflation rate for the FPFTY as described in
19 Adjustment 29.

20 Adjustment 5 calculates the 401K Matching and Other Benefits for the FTY
21 and FPFTY. This expense was adjusted for the FTY and FPFTY based on 3.1%
22 of the total gross labor expense calculated in Workpaper CEH-2-1.

23 Adjustment 6 calculates the Purchased Water Expense for the FTY and
24 FPFTY. The expense for the Future Test Year was based on the three-year
25 average cost of purchased water, increased by the Future Test Year Inflation Rate.
26 The per books expense for the Fully Projected Future Test Year was increased by

SWPA STATEMENT NO. 2
DIRECT TESTIMONY OF CONSTANCE E. HEPPENSTALL
REGARDING INCOME STATEMENT, OPERATING REVENUE
AND EXPENSE ADJUSTMENTS

1 the Fully Projected Future Test Year Inflation rate. The calculation of the inflation
2 rates is detailed in Adjustment 29. The expense was also increased by \$105,000
3 in the FPFTY to reflect the Company's plan to purchase water from the
4 Susquehanna Area Regional Airport Authority in 2019.

5 Adjustment 7 calculates the Purchased Power Expense for the FTY and
6 FPFTY. The expense for the Future Test Year was based on the three-year
7 average cost of purchased power, increased by the Future Test Year Inflation
8 Rate. The expense for the Fully Projected Future Test year was increased by the
9 Fully Projected Future Test Year Inflation rate. The calculation of the inflation rates
10 is detailed in Adjustment 29. The actual expense for this account for the year
11 ending December 31, 2017 was \$1,404,352 (see Line 9 of Adjustment 7) which
12 included \$161,001 that was recorded in Account 50620, Fuel – Power Production.
13 Adjustment 8 shows the adjustment of Account 50620 to remove this amount from
14 the account.

15 Adjustment 8 calculates the Fuel – Power Production Expense for the FTY
16 and FPFTY. The amount for the FTY was adjusted downward to the correct
17 expense in this account for 2017 and then was increased by the FTY Inflation rate.
18 The expense for the Fully Projected Future Test year was increased by the FPFTY
19 Inflation rate. The calculation of the inflation rates is detailed in Adjustment 29.

20 Adjustments 9 and 10 calculate the Chemical and Materials and Supplies
21 Expenses for the FTY and FPFTY. In each expense, the expense for the FTY was
22 based on the three-year average, increased by the FTY Inflation Rate. The
23 expense for the FPFTY year was increased by the FPFTY Inflation rate. The
24 calculation of the inflation rates is detailed in Adjustment 29.

SWPA STATEMENT NO. 2
DIRECT TESTIMONY OF CONSTANCE E. HEPPENSTALL
REGARDING INCOME STATEMENT, OPERATING REVENUE
AND EXPENSE ADJUSTMENTS

1 Adjustment 11 calculates the Management & Services Expense for the FTY
2 and FPFTY based on the Company's response to MFR-III-06 and excludes non-
3 recoverable management fees incurred in 2017.

4 Adjustment 12 calculates the Lab Testing Fees for the FTY and FPFTY.
5 The FTY expense is calculated based on the average of the expense for 2015 and
6 2016. Added to the expense for the FTY is the 3-year normalization of UCMR4
7 costs of \$10,000 (\$30,000 normalized over three years). The expense for the
8 FPFTY was increased by the FPFTY Inflation rate. The calculation of the inflation
9 rates is detailed in Adjustment 29.

10 Adjustment 13 calculates the Outside Contracts Expense for the FTY and
11 FPFTY. The expense for the FTY was based on the two-year average expense,
12 increased by the FTY Inflation Rate. The expense for the FPFTY was increased
13 by the FPFTY Year Inflation rate as shown in Adjustment 29, as well as by
14 additional Convenience Fees. Please refer to Witness John Hollenbach's direct
15 testimony for a full discussion of this additional expense. In addition, this expense
16 was adjusted to include a two year normalization of the Company's cost for a Non-
17 Revenue Water Study and an Inventory Process Study.

18 Adjustments 14, 16, 18, 19, and 20 calculate the Outside Professional
19 Services, Rental of Equipment, Property and General Liability Insurance, Workers
20 Compensation, and Advertising expenses for the FTY and FPFTY. For each of
21 the adjustments, the expenses for the FTY are based on the three-year average,
22 increased by the FTY Inflation Rate. The expenses for the FPFTY are increased
23 by the FPFTY Inflation rate. The calculation of the inflation rates is detailed in
24 Adjustment 29.

SWPA STATEMENT NO. 2
DIRECT TESTIMONY OF CONSTANCE E. HEPPENSTALL
REGARDING INCOME STATEMENT, OPERATING REVENUE
AND EXPENSE ADJUSTMENTS

1 Adjustment 15 calculates the Rent – Building and Property Expense for the
2 FTY and FPFTY. The adjustment equals the projected rent expense for 2018 and
3 2019 multiplied by 50%, as 50% of the expense is capitalized.

4 Adjustment 17 calculates the Transportation Expense for the FTY and
5 FPFTY. The Lease portion of the expense is for the FTY and FPFTY is based on
6 Company projections. The additional expenses in this account are increased by
7 the relevant Inflation Rates for each year.

8 Adjustment 21 calculates the Regulatory Commission Expense – Rate
9 Case Amortization for the FTY and FPFTY. The FTY includes the Company's
10 projected amortization of prior rate case expense. The FPFTY expense includes
11 the normalization of projected rate case expense over 3 years.

12 Adjustment 22 and 23 calculates the Regulatory Commission Expense and
13 Bad Debt Expense for the FTY and the FPFTY and is adjusted based on projected
14 revenues under present rates for the FTY and FPFTY and under proposed rates
15 for the FPFTY.

16 Adjustment 24 calculates the Fringe Benefits Transferred for the FTY and
17 the FPFTY. The expense adjustment was based on the historic percentage of
18 benefits transferred of 32.84%. This percentage is multiplied by the total projected
19 fringe benefits listed in the adjustment.

20 Adjustment 25 calculates the Office Expense and Utilities for the FTY and
21 the FPFTY. The expense for the FTY was increased by the FTY inflation rate.
22 The FPFTY expense was increased by the FPFTY inflation rate and also includes
23 an adjustment for the projected increase in Pennsylvania Department of
24 Environmental Protection (“DEP”) Annual Fees of \$111,704. In 2019, the DEP is
25 changing its fee structure to be based on population. See Adjustment 25 for further
26 detail.

SWPA STATEMENT NO. 2
DIRECT TESTIMONY OF CONSTANCE E. HEPPENSTALL
REGARDING INCOME STATEMENT, OPERATING REVENUE
AND EXPENSE ADJUSTMENTS

1 Adjustment 26 calculates the Postage and Air Freight Expense for the FTY
2 and the FPFTY. The FTY expense adjustment was based on the 2018 increase
3 to bulk postage. The FPFTY expense was adjusted based on the FPFTY inflation
4 rate.

5 Adjustment 27 calculates Other O&M expenses for the FTY and FPFTY.
6 The expense for the FTY is based on the two-year average of historic expense,
7 increased by the FTY Inflation Rate. The expense for the FPFTY is increased by
8 the FPFTY Inflation rate. The calculation of the inflation rates is detailed in
9 Adjustment 29.

10 Adjustment 28 shows the Operation and Maintenance expense adjustments
11 due to the acquisition of the Mahoning Township Water System.

12 Adjustment 29 calculates the FTY and FPFTY Inflation Adjustment rate
13 based on the Consumer Price Index (CPI) published by the Blue Chip Financial
14 Forecasts as of March 1, 2018. The calculation averages four quarters of
15 projected 2018 CPI for the FTY inflation rate. The FPFTY Inflation Rate is
16 calculated based on the average of two quarters of projected CPI and estimates
17 for the third and fourth quarters based on the CPI for the second quarter.

18
19 **PRO FORMA TAXES OTHER THAN INCOME, DEPRECIATION AND INCOME TAX**

20 **ADJUSTMENTS**

21 **Q. Please explain the development of the pro forma HTY, FTY and FPFTY taxes**
22 **other than income, depreciation and income taxes shown in Exhibit No. CEH-**
23 **2.**

24 **A.** The pro forma Historic Test Year, Future Test Year and Fully Projected Future
25 Test Year adjustments are summarized in Exhibit No. CEH-2, Schedule 1. The
26 adjustments are detailed in Schedules 30-33.

SWPA STATEMENT NO. 2
DIRECT TESTIMONY OF CONSTANCE E. HEPPENSTALL
REGARDING INCOME STATEMENT, OPERATING REVENUE
AND EXPENSE ADJUSTMENTS

1

2 **Q. Please describe your adjustments to Taxes Other Than Income.**

3 A. Adjustment 30 calculates the FTY and FPFTY adjustment for Real Estate Taxes.
4 The FTY Adjustment eliminates the refund received in 2017 and increases the
5 Public Utility Realty Tax Act ("PURTA") and Property tax by the FTY inflation rate.
6 The FPFTY expense increases the FTY expense by the FPFTY inflation rate.

7 Adjustment 31 calculates the FTY and FPFTY adjustment for Payroll taxes
8 based on the Payroll Tax workpapers, Workpaper CEH-2.2.

9 Adjustment 32 shows the Adjustment to Depreciation Expense based on
10 Exhibits No. JJS-1, JJS-2 and JJS-3 as well as the amortization of the regulatory
11 liability related to the Tax Cuts and Jobs Act of 2017 ("TCJA")

12 Adjustment 33 shows the adjustment for Income Taxes for the FTY, and
13 FPFTY under present rates and Income Taxes for FPFTY under proposed rates.

14

15 **Q. Does this conclude your direct testimony?**

16 A. Yes, it does. However, I reserve the right to supplement my testimony as additional
17 issues and facts arise during the course of the proceeding. Thank you.

APPENDIX A

CONSTANCE E. HEPPENSTALL – LIST OF CASES TESTIFIED

	<u>Year</u>	<u>Jurisdiction</u>	<u>Docket No.</u>	<u>Client/Utility</u>	<u>Subject</u>
1.	2010	AZ CC	W-01303A-09-0343 and SW-01303A-09-0343	Arizona American Water Company	Rate Consolidation
2.	2010	Pa PUC	R-2010-2179103	City of Lancaster – Bureau of Water	Revenue Requirements
3.	2012	Pa PUC	R-2012-2311725	Hanover Borough	Cost of Service/Rev Reqmts.
4.	2012	Pa PUC	R-2012-2310366	City of Lancaster – Sewer Fund	Revenue Requirements
5.	2013	Pa PUC	R-2013-2350509	City of DuBois – Bureau of Water	Revenue Requirements
6.	2013	Pa PUC	R-2013-2390244	City of Bethlehem – Bureau of Water	Revenue Requirements
7.	2014	Pa PUC	R-2014-2418872	City of Lancaster – Bureau of Water	Revenue Requirements
8.	2014	Pa PUC	R-2014-2428304	Hanover Borough	Revenue and Revenue Requirements
9.	2015	KY PSC	Case No.2015-000143	Northern Kentucky Water District	Cost of Service
10.	2016	Pa PUC	R-2016-2554150	City of DuBois – Bureau of Water	Cost of Service/Revenue Reqmts.
11.	2016	AZ CC	WS-01303A-16-0145	EPCOR Water Arizona, Inc.	Cost of service/Rate Design
12.	2017	MO PSC	WR-2017-0285	Missouri-American Water Company	Cost of Service/Rate Design
13.	2017	MO PSC	SR-2017-0286	Missouri-American Water Company	Cost of Service/Rate Design
14.	2017	VA SCC	PUR-2017-00082	Aqua Virginia, Inc.	Cost of Service/Rate Design
15.	2017	AZ CC	WS-01303A-17-0257	EPCOR Water Arizona, Inc.	Cost of Service/Rate Design
16.	2017	HI PUC	2017-0446	Hana Water Systems LLC – North	Cost of Service/Rate Design
17.	2017	HI PUC	2017-0447	Hana Water Systems LLC - South	Cost of Service/Rate Design

SUEZ WATER PENNSYLVANIA INC.

HARRISBURG, PENNSYLVANIA

INCOME STATEMENT AND PRO FORMA REVENUES AS OF DECEMBER 31, 2019



Excellence Delivered As Promised

SUEZ WATER PENNSYLVANIA INC.

STATEMENT OF THE CALCULATION OF THE RATE OF RETURN UNDER PRESENT RATES FOR THE TWELVE MONTHS ENDED DECEMBER 31, 2017, 2018 AND 2019
AND THE ANTICIPATED RATE OF RETURN UNDER PROPOSED RATES FOR THE YEAR ENDING DECEMBER 31, 2019

Line No	Description (1)	12 Months Ended 31-Dec-17 (2)	Pro Forma FTY Adjustments		Pro Forma Present Rates, 31-Dec-18 (5)	Pro Forma FPFTY Adjustments and DSIC Adjustment		Pro Forma Present Rates, 31-Dec-19 (8)	Under Proposed Rates, Supplement No _____ to Tariff Water Pa-PUC No 7		
			Ref. (3)	Amount (4)		Ref (6)	Amount (7)		Ref	Increase (9)	Pro Forma 31-Dec-19 (10)
1	Operating Revenues	\$ 43,660,297	CEH-1	\$ (7,302)	\$ 43,652,995	CEH-1	\$ 3,729,255	\$ 47,382,250	CEH-1	\$ 6,236,405	\$ 53,618,655
2			Sch 5			Sch 4,5,7			Sch 2,7		
3	Operating Revenue Deductions										
2	Operation and Maintenance										
3	Expenses	\$ 16,232,944	CEH-2	\$ 1,635,802	\$ 17,868,746	CEH-2	\$ 1,336,942	\$ 19,205,688	CEH-2	\$ 53,605	\$ 19,259,294
4	Taxes Other than Income	\$ 831,179	CEH-2	\$ 98,284	\$ 929,463	CEH-2	\$ 38,929	\$ 968,391		\$ -	\$ 968,391
3											
4											
5	Depreciation	7,361,991	CEH-2	802,796	8,164,788	CEH-2	558,174	8,722,962	CEH-2	\$ -	8,722,962
	Amortization of Acquisition Adjustment	57,744	CEH-2	-	57,744	CEH-2	-	57,744	CEH-2	\$ -	57,744
	Amortization of Regulatory Asset	(265,198)	CEH-2		(265,198)	CEH-2		(265,198)	CEH-2		(265,198)
4											
5	Total Operating										
6	Revenue Deductions	\$ 24,218,660	CEH-2	\$ 2,536,882	\$ 26,755,542	CEH-2	\$ 1,934,045	\$ 28,689,587		\$ 53,605	\$ 28,743,192
5											
6	Total Income Before Taxes and Return	\$ 19,441,637		\$ (2,544,184)	\$ 16,897,453		\$ 1,795,210	\$ 18,692,663		\$ 6,182,799	\$ 24,875,462
7											
6	Less Federal and State Taxes	\$ 6,832,581	CEH-2	\$ (3,315,302)	\$ 3,517,279		\$ 215,509	\$ 3,732,788	CEH-2	\$ 1,786,341	\$ 5,519,128
7											
8											
7	Net Operating Income										
8	Available for Return	\$ 12,609,056		\$ 771,118	\$ 13,380,174		\$ 1,579,701	\$ 14,959,875		\$ 4,396,459	\$ 19,356,334
9											
8											
9	Rate Base	\$ 190,763,193	CEH-1.1	\$ 18,285,028	\$ 209,048,221		\$ 34,400,638	\$ 243,448,860		\$ -	\$ 243,448,860
10											
9	Rate of Return	6 61%			6 40%			6 14%			7 95%

SUEZ WATER PENNSYLVANIA INC.

ORIGINAL COST MEASURE OF VALUE AS OF DECEMBER 31, 2017,
DECEMBER 31, 2018 AND DECEMBER 31, 2019

		As of <u>12/31/2017</u>	As of <u>12/31/2018</u>	As of <u>12/31/2019</u>
Original Cost of Utility Plant In Service	(a)	\$ 340,882,879	\$ 367,714,123	\$ 409,389,892
Less: Accumulated Depreciation	(a)	<u>(70,281,368)</u>	<u>(78,617,020)</u>	<u>(85,360,944)</u>
Net Utility Plant		270,601,511	289,097,103	324,028,948
CIAC and Contributions		(63,114,693)	(63,114,693) (b)	(63,114,693) (b)
Add:				
Deferred Taxes		\$ (17,914,199)	\$ (18,237,542)	\$ (18,810,736)
Materials and Supplies		481,594	481,594	481,594
Cash Working Capital		<u>708,981</u>	<u>821,760</u>	<u>863,746</u>
Total Original Cost Measure of Value		<u>\$ 190,763,193</u>	<u>\$ 209,048,221</u>	<u>\$ 243,448,860</u>

(a) Source: Exhibits JJS-1, JJS-2 and JJS-3.

(b) 2018 and 2019 CIAC and Advances included in total Net Utility Plant.

SUEZ WATER PENNSYLVANIA INC.

<u>TYPE OF CAPITAL</u>	<u>RATIOS</u>	<u>COST RATE</u>	<u>WEIGHTED COST RATE</u>
LONG-TERM DEBT	45.82%	4.65%	2.13%
COMMON EQUITY	54.18%	10.75%	5.82%
TOTAL	100.00%		7.95%

Source: Direct testimony of Dylan D'Ascendis.

SUEZ WATER PENNSYLVANIA INC.

SUMMARY OF PRO FORMA REVENUES UNDER PROPOSED RATES FOR THE TWELVE MONTHS ENDED DECEMBER 31, 2017 AND 2019
AND THE CALCULATION OF THE REVENUE INCREASE UNDER PROPOSED RATES

Customer Classification (1)	Pro Forma Revenues, Present Rates (Schedule 4) (2)	Bill Analysis Revenues, Proposed Rates (Schedule 3) (3)	Adjustment Factor (Sch. 4, col 4) (4)	Revenues, Proposed Rates (5)=(4)X(3) (5)	Pro Forma Adjustments Proposed Rates (Schedules 3 and 7) (6)	Total Pro Forma Revenue Proposed Rates (7)=(5)+(6) (7)	Proposed Increase (8)=(7)-(2) (8)	Percent Increase (9)
METERED SALES								
Residential	\$ 29,345,020	\$ 32,053,919	0.99899003	\$ 32,021,545	\$ 613,893	\$ 32,635,438	\$ 3,290,418	11.2%
Commercial	11,958,637	13,732,962	0.99980693	13,730,311	231,245	13,961,556	2,002,919	16.7%
Industrial	1,467,311	1,742,130	0.99990886	1,741,971	-	1,741,971	274,660	18.7%
Municipal	1,835,763	2,275,357	0.99167720	2,256,420	(83,123)	2,173,296	337,534	18.4%
Total Metered Sales	44,606,731	49,804,367		49,750,246	762,015	50,512,261	5,905,530	13.2%
Private Fire	1,446,048	1,681,110	1.00000000	1,681,110	10,778	1,691,887	245,840	17.0%
Public Fire	923,861	1,008,895	1.00000000	1,008,895		1,008,895	85,034	9.2%
Other Operating Revenues	405,611	405,611		405,611		405,611	-	0.0%
Total	\$ 47,382,250	\$ 52,899,983		\$ 52,845,862	\$ 772,793	\$ 53,618,655	\$ 6,236,405	13.2%

SUEZ WATER PENNSYLVANIA INC.

SUMMARY OF APPLICATION OF PROPOSED RATES TO CUSTOMER BILL ANALYSIS AND PRO FORMA ADJUSTMENTS
FOR THE TWELVE MONTHS ENDING DECEMBER 31, 2017 AND 2019

<u>Rate Zone</u> (1)	<u>Residential</u> (2)	<u>Commercial</u> (3)	<u>Industrial</u> (4)	<u>Large Industrial</u> (5)	<u>Municipal</u> (6)	<u>Metered Total</u> (7)
<u>Proposed Rate Application, Schedule 6</u>						
Total Revenue	\$ 32,053,919	\$ 13,732,962	\$ 888,772	\$ 853,358	\$ 2,275,357	\$ 49,804,367
5 Total	<u>\$ 32,053,919</u>	<u>\$ 13,732,962</u>	<u>\$ 888,772</u>	<u>\$ 853,358</u>	<u>\$ 2,275,357</u>	<u>\$ 49,804,367</u>
<u>Pro Forma Adjustments, Schedule 9 - 2018 and 2019</u>						
All Including Trunk Line	\$ 41,934	\$ (127,455)	\$ -	\$ -	\$ (83,123)	\$ (168,644)
Mahoning Twp.	\$ 571,959	\$ 358,700				\$ 930,659
Total	<u>\$ 613,893</u>	<u>\$ 231,245</u>	<u>\$ -</u>	<u>\$ -</u>	<u>\$ (83,123)</u>	<u>\$ 762,015</u>

SUEZ WATER PENNSYLVANIA INC.

SUMMARY OF REVENUE UNDER PRESENT RATES AND PRO FORMA REVENUES UNDER PRESENT RATES
FOR THE TWELVE MONTHS ENDED DECEMBER 31, 2017 AND 2019

Customer Classification (1)	Adjusted Revenues, Per Books Present Rates 12/31/2017 (a) (2)	Bill Analysis Revenues, Present Rates (Schedule 5) (3)	Ref.	Adjustment Factor (4)=(2)/(3)	Revenues Under Present Rates (5)=(4)X(3)	Pro Forma Adjustments Present Rates (Schedule 5 and 7) (6)	Add Back Annualized DSIC Revenue (7)	Total Pro Forma Revenue Present Rates (8)=(5)+(6)+(7)
METERED SALES								
Residential	\$ 26,796,924	\$ 26,824,015	Sch. 6	0.99899003	\$ 26,796,924	\$ 500,770	\$ 2,047,327	\$ 29,345,020
Commercial	11,045,912	11,048,045	Sch. 6	0.99980693	11,045,912	78,401	834,324	11,958,637
Industrial	1,278,641	1,278,758	Sch. 6	0.99990886	1,278,641	86,299	102,371	1,467,311
Public Sales	1,772,512	1,787,388	Sch. 6	0.99167720	1,772,512	(64,825)	128,076	1,835,763
							-	
Total Sales of Water	\$ 40,893,989	\$ 40,938,206			\$ 40,893,989	\$ 600,645	\$ 3,112,098	\$ 44,606,731
Private Fire	\$ 1,436,836	\$ 1,436,836	Sch. 7	1.00000000	1,436,836	\$ 9,211		1,446,048
Public Fire	923,861	923,861	Sch 8	1.00000000	923,861			923,861
Other Operating Revenues	405,611	405,611			405,611			405,611
Total	\$ 43,660,297	\$ 43,704,514			\$ 43,660,297	\$ 609,856	\$ 3,112,098	\$ 47,382,250

(a) Excludes DSIC and Unbilled Revenue.

(c) See Schedule 6.

(d) See Schedule 7.

SUEZ WATER PENNSYLVANIA INC.

SUMMARY OF APPLICATION OF PRESENT RATES TO CUSTOMER BILL ANALYSIS AND PRO FORMA ADJUSTMENTS
FOR THE TWELVE MONTHS ENDING DECEMBER 31, 2017, 2018 AND 2019

<u>Rate Zone</u> (1)	<u>Residential</u> (2)	<u>Commercial</u> (3)	<u>Industrial</u> (4)	<u>Large Industrial</u> (5)	<u>Public Authority</u> (6)	<u>Metered Total</u> (7)
<u>Present Rate Application, Schedule 6</u>						
Total Revenue	\$ 26,824,015	\$ 11,048,045	\$ 664,035	\$ 614,723	\$ 1,787,388	\$ 40,938,206
Total	<u>\$ 26,824,015</u>	<u>\$ 11,048,045</u>	<u>\$ 664,035</u>	<u>\$ 614,723</u>	<u>\$ 1,787,388</u>	<u>\$ 40,938,206</u>
<u>Pro Forma Adjustments - Schedule 9 - 2018</u>						
Total Adjustments	\$ 13,018	\$ (49,897)		\$ 86,299	\$ (56,722)	\$ (7,302)
Subtotal	<u>\$ 13,018</u>	<u>\$ (49,897)</u>	<u>\$ -</u>	<u>\$ 86,299</u>	<u>\$ (56,722)</u>	<u>\$ (7,302)</u>
<u>Pro Forma Adjustments - Schedule 9 - 2019</u>						
All	\$ (67,241)	\$ (49,832)			\$ (8,103)	\$ (125,176)
Trunk Line	\$ 119,862		\$ -			\$ 119,862
Mahoning Twp.	\$ 435,131	\$ 178,130				\$ 613,261
Subtotal	<u>\$ 487,752</u>	<u>\$ 128,298</u>	<u>\$ -</u>	<u>\$ -</u>	<u>\$ (8,103)</u>	<u>\$ 607,947</u>
Total Adjustments	\$ 500,770	\$ 78,401	\$ -	\$ 86,299	\$ (64,825)	\$ 600,645

SUEZ WATER PENNSYLVANIA INC

APPLICATION OF PRESENT RATES AND PROPOSED RATES TO CONSUMPTION ANALYSIS
YEAR ENDED DECEMBER 31, 2017

Line No	Rate Block 1000 Gallons (1)	Number Of Bills (2)	Present Consumption (3)	Test Year Rate (4)	Revenue (5)	Proposed Consumption	Proposed Rate (6)	Proposed Revenue (7)
<u>Residential - Monthly</u>								
1	Customer Charge							
2	5/8	644,460	-	\$ 13 75	\$ 8,861,329		\$ 15 00	\$ 9,666,905
3	3/4	3,179	-	13 75	43,715		15 00	47,689
4	1	3,234	-	28 50	92,162		31 09	100,537
5	1 1/2	204	-	57 00	11,651		62 18	12,710
6	2	60	-	97 63	5,868		106 51	6,401
7	3	-	-	183 13	-		199 78	-
8	Subtotal	651,138	-		9,014,725			9,834,241
9								
10	First Block	-	2,297,795	7 7506	17,809,290	2,297,795	9 6700	22,219,678
12	Subtotal	-	2,297,795		17,809,290	2,297,795		22,219,678
13								
14	Total Residential	651,138	2,297,795		\$ 26,824,015	2,297,795		\$ 32,053,919
15								
16								
17								
<u>Commercial - Monthly</u>								
18	Customer Charge				0		0	
19	5/8	30,038	-	\$ 13 75	\$ 413,022		\$ 15 00	\$ 450,570
20	3/4	326	-	13 75	4,477		15 00	4,884
21	1	13,157	-	28 50	374,983		31 09	409,061
22	1 1/2	6,172	-	57 00	351,828		62 18	383,801
23	2	5,631	-	97 63	549,707		106 51	599,706
24	3	336	-	183 13	61,532		199 78	67,126
25	4	377	-	305 25	114,937		333 00	125,386
26	6	289	-	610 50	176,679		666 00	192,740
27	8	27	-	976 88	26,571		1,065 69	28,987
28	Subtotal	56,353	-		2,073,736			2,262,260
29								
30	First Block (First 25,000)	-	566,511	7 7506	4,390,804	566,511	9 6700	5,478,166
31	Second Block (Over 25,000)	-	843,782	5 4321	4,583,505	843,782	7 1020	5,992,536
32	Subtotal	-	1,410,293		8,974,309	1,410,293		11,470,702
33								
34	Total Class	56,353	1,410,293		\$ 11,048,045	1,410,293		\$ 13,732,962

SUEZ WATER PENNSYLVANIA INC

APPLICATION OF PRESENT RATES AND PROPOSED RATES TO CONSUMPTION ANALYSIS
YEAR ENDED DECEMBER 31, 2017

Line No	Rate Block 1000 Gallons (1)	Number Of Bills (2)	Present Consumption (3)	Test Year Rate (4)	Revenue (5)	Proposed Consumption	Proposed Rate (6)	Proposed Revenue (7)
35								
36								
37	Customer Charge							
38	5/8	108	-	\$ 13.75	\$ 1,488		\$ 15.00	\$ 1,623
39	3/4	12	-	13.75	165		15.00	180
40	1	133	-	28.50	3,779		31.09	4,123
41	1 1/2	36	-	57.00	2,075		62.18	2,263
42	2	127	-	97.63	12,431		106.51	13,561
43	3	96	-	183.13	17,654		199.78	19,259
44	4	28	-	305.25	8,498		333.00	9,270
45	6	12	-	610.50	7,326		666.00	7,992
46	8	12	-	976.88	11,723		1,065.69	12,788
47	Subtotal	565	-		65,139			71,059
48								
49	First Block (First 25,000)	-	8,426	7.7506	65,307	8,426	9.6700	81,479
50	Second Block (Over 25,000)	-	92,608	5.7618	533,589	92,608	7.9500	736,234
51	Subtotal	-	101,034		598,896	101,034		817,713
52								
53	Total Industrial	565	101,034		\$ 664,035	101,034		\$ 888,772
54								
55								
56	Customer Charge							
57	4	12	-	305.25	3,663		333.00	\$ 3,996
58	6	24	-	610.50	14,652		666.00	15,984
	Minimum Charge	24				168,000	30,800.00	739,200
59	Subtotal	36	-		18,315	168,000	31,799	759,180
60								
61	All Consumption	-	165,462	3.6045	596,408	21,404	\$ 4.4000	94,178
62								
63	Total Large Industrial	36	165,462		\$ 614,723	189,404		\$ 853,358
64								
65	Total Class	601	266,496		\$ 1,278,758	290,438		\$ 1,742,130
66								
67								
68								
69	Customer Charge							
70	5/8	1,139	-	\$ 13.75	\$ 15,662		\$ 15.00	\$ 17,086
71	1	488	-	28.50	13,922		31.09	15,187
72	1 1/2	320	-	57.00	18,242		62.18	19,900
73	2	738	-	97.63	72,004		106.51	78,553
74	3	155	-	183.13	28,337		199.78	30,913
75	4	44	-	305.25	13,553		333.00	14,785
76	6	95	-	610.50	57,857		666.00	63,117
77	Subtotal	2,979	-		219,577			239,541
78								
79	First Block (First 25,000)	-	30,139	7.7506	233,595	30,139	9.6700	291,444
80	Second Block (Over 25,000)	-	245,617	5.4321	1,334,216	245,617	7.1020	1,744,372
81	Subtotal	-	275,756		1,567,811	275,756		2,035,816
82								
83	Total Class	2,979	275,756		\$ 1,787,388	275,756		\$ 2,275,357
84								
85	Total	711,070	4,250,340		\$ 40,938,206	4,274,282		\$ 49,804,367

SUEZ WATER PENNSYLVANIA INC.

APPLICATION OF PRESENT AND PROPOSED RATES TO PRIVATE FIRE CONNECTIONS AS OF 12-31-2017

Rate Zone, Connection Size (1)	Number (2)	Present Rates		Number (5)	Proposed Rates	
		Rate (3)	Revenue (4)		Rate (6)	Revenue (7)
2" or smaller	883	\$ 19.30	\$ 17,041	883	\$ 22.58	\$ 19,937
3"	60	52.05	3,123	60	60.90	3,654
4"	2,218	66.76	148,078	2,218	78.11	173,253
6"	3,725	110.98	413,441	3,725	129.85	483,739
8"	2,634	165.42	435,766	2,634	193.54	509,842
10"	360	236.86	85,364	360	277.13	99,878
12"	123	328.64	40,423	123	384.51	47,295
Hydrants	6,828	43.00	293,600	6,828	50.31	343,512
Total Private Fire	<u>16,832</u>		<u>\$ 1,436,836</u>	<u>16,832</u>		<u>\$ 1,681,110</u>
HTY, FTY and FPFTY 6"	83	110.98	9,211	83	129.85	10,778

SUEZ WATER PENNSYLVANIA INC.

APPLICATION OF PRESENT AND PROPOSED RATES TO
THE NUMBER OF PUBLIC FIRE HYDRANTS AS OF DECEMBER 31, 2017

<u>Service Area</u> (1)	<u>Pro Forma Number of Bills</u> (2)	<u>Present Monthly Rate</u> (3)	<u>Pro Forma Present Revenue</u> (4)	<u>Proposed Monthly Rate</u> (5)	<u>Pro Forma Proposed Revenue</u> (6)
Bloomsburg/Dallas	4,368	\$ 18.33	\$ 80,065	\$ 20.00	\$ 87,360
Harrisburg	27,024	24.17	653,170	25.83	698,030
Mechanicsburg	7,380	25.83	190,625	25.83	190,625
Mahoning	<u>1,644</u>		<u></u>	20.00	<u>32,880</u>
 Total	 <u>40,416</u>		 <u>\$ 923,861</u>		 <u>\$ 1,008,895</u>

SUEZ WATER PENNSYLVANIA INC

APPLICATION OF PRESENT RATES AND PROPOSED RATES TO PROFORMA ADJUSTMENTS
YEAR ENDED DECEMBER 31, 2017, 2018 AND 2019

Rate Block 1000 Gallons (1)	Number Of Bills (2)	Total Consumption (3)	Test Year/Present Rate (4)	Revenue (5)	Proposed Rate (6)	Proposed Revenue (7)
<u>Residential - Monthly</u>						
Customer Charge						
5/8	18,542	-	\$ 13.75	\$ 254,953	\$ 15.00	\$ 278,130
Subtotal	18,542	-		254,953		278,130
All Usage - Test Year	-	(24,426)	7 7506	(189,313)	9.6700	(236,196)
Subtotal	-	(24,426)		(189,313)		(236,196)
Total Residential	18,542	(24,426)	-	65,639	-	41,934
<u>Commercial - Monthly</u>						
Customer Charge						
5/8	-	-	13.75	-	15.00	-
3/4	-	-	13.75	-	15.00	-
1	678	-	28.50	19,323	31.09	21,079
Subtotal	678	-		19,323		21,079
Test Year First Block (First 25)	-	(15,360)	7.7506	(119,051)	9.6700	(148,534)
Test Year Second Block (Over 25)	-	-	5.4321	-	7.1020	-
Subtotal	-	(15,360)		(119,051)		(148,534)
Total Class	678	(15,360)		(99,728)		(127,455)
<u>Large Industrial - Monthly</u>						
Customer Charge						
4	-	-	305.25	-	333.00	-
6	-	-	610.50	-	666.00	-
Subtotal	-	-		-		-
Take or Pay Volume	-	23,942	3.6045	86,299	-	-
Subtotal	-	23,942		86,299		-
Total	-	23,942		86,299		-
<u>Public Authority - Monthly</u>						
Customer Charge						
5/8	(112)	-	13.75	(1,540)	15.00	(1,680)
Subtotal	(112)	-		(1,540)		(1,680)
First Block (First 160)	-	(2,800)	7.7506	(21,702)	9.6700	(27,076)
Second Block (Over 160)	-	(7,655)	5.4321	(41,584)	7.1020	(54,367)
Subtotal	-	(10,455)		(63,286)		(81,443)
Total	(112)	(10,455)		(64,826)		(83,123)
Total	19,108	(50,241)		(98,915)		(168,644)

ADJUSTMENT 1 - CUSTOMER GROWTH REVENUE ADJUSTMENT UNDER PRESENT RATES
FOR THE TEST YEARS ENDING DECEMBER 31, 2017, 2018 AND 2019

	Residential	Commercial	Industrial	Public Authority	Private Fire	Total
<u>Historic TY Customer Growth Calculation</u>						
1 Actual Normalized Bills	652,728	56,712	612	2,952	1,018	714,022
2 Actual Annualized Bills	656,780	56,712	612	2,784	1,016	717,884
3 Projected Daily Usage in gallons (a)	111.32	798.96	14,515.03	3,111.67		18,537
4 Monthly Volumes per Normalization (1000 Gallons) Line 3 X30 /1000	3.34	23.97	435.45	93.35		
5 HTY Customer Annualized Growth Bills (Line 2-Line 1) Divided by 2	2,016	NA	NA	(84)	(1)	1,931
6 HTY Customer Annualized Growth Volumes (Line 4 X Line 5 / 2)	6,733	NA	NA	(7,841)	-	(1,108)
Pnced At First Block	6,733			(2,100)		4,633
Pnced At Second Block				(5,741)		(5,741)
<u>Historic TY Customer Growth Revenue Calculation</u>						
7 Average Service Charge	\$ 13.75	\$ 28.50		\$ 13.75	\$ 110.98	
8 Revenue From Service Charge (Line 7 X Line 5)	\$ 27,720			\$ (1,155)	\$ (111)	
9 Volume Charge - First Block	7,7506	7,7506		7,7506		
Volume Charge - Second Block		5,4321		5,4321		
10 Revenue from Volumetric Charge (Line 9 X Line 6)						
Pnced At First Block	\$ 52,188			\$ (16,276)		
Pnced At Second Block				(31,188)		
11 Total Historical TY Adjustment (Line 8 + Line 10)	\$ 79,908			\$ (48,619)	\$ (111)	\$ 31,178
<u>Future Test Year Customer Growth Calculation</u>						
12 Forecasted Customer Growth	562.6	28.3		(1.2)	3.5	
13 Annualized Bills (Line 12 X 12)	6,751	339		(14)	42	
14 Average Volumes Per Normalization						
Pnced At First Block	3.34	23.97		25.00		
Pnced At Second Block				68.35		
15 Normalized Volumes (Line 13 X Line 14)	22,548	8,125				
16 Revenue From Service Charge (Line 7 X Line 13)	\$ 92,826	\$ 9,662	\$ -	\$ (193)	\$ 4,661	\$ 106,956
17 Revenue from Volumetric Charge (Line 9 X Line 15)						
Pnced At First Block	\$ 174,763	\$ 62,977		\$ (2,713)		\$ 235,028
Pnced At Second Block	\$ -	\$ -		\$ (5,198)		\$ (5,198)
18 Total FTY Adjustment (Line 16 + Line 17)	\$ 267,589	\$ 72,639	\$ -	\$ (8,103)	\$ 4,661	\$ 336,786
<u>Fully Projected Future Test Year Customer Growth Calculation</u>						
19 Forecasted Customer Growth	562.6	28.3	-	(1.2)	3.5	
20 Annualized Bills (Line 12 X 12)	6,751	339		(14)	42	
21 Average Volumes Per Normalization						
Pnced At First Block	3.34	23.97	-	25.00	-	
Pnced At Second Block	-	-	-	68.35	-	
Total	3.34	23.97	-	93.35	-	
22 Normalized Volumes (Line 13 X Line 14)	22,548	8,125		(350)		
23 Revenue From Service Charge (Line 7 X Line 13)	\$ 92,826	\$ 9,662	\$ -	\$ (193)	\$ 4,661	\$ 106,956
24 Revenue from Volumetric Charge (Line 9 X Line 15)						
Pnced At First Block	\$ 174,763	\$ 62,977		\$ (2,713)		\$ 235,028
Pnced At Second Block	\$ -	\$ -		\$ (5,198)		\$ (5,197)
25 Total FTY Adjustment (Line 16 + Line 17)	\$ 267,589	\$ 72,639	\$ -	\$ (8,103)	\$ 4,661	\$ 336,786
Total Adjustment	\$ 615,087	\$ 145,278	\$ -	\$ (64,825)	\$ 9,211	\$ 704,751

(a) For residential and commercial, see declining usage worksheet For Industrial and Public, based on 2017 usage

	Residential	Commercial	Industrial	Public Authority	Private Fire Protection
26 Number of Customers					
Period Ending 12/31/15	53,269.3	4,669.0	51.1	248.5	1,011.1
27 Period Ending 12/31/16	53,804.7	4,686.8	51.0	248.2	1,021.9
28 Historic Test Year Period Ending 12/31/17	54,394.4	4,725.6	51.0	246.2	1,018.2
29 Increase 2015-2016	535.4	17.8	(0.1)	(0.3)	10.8
30 Increase 2016-2017	569.8	38.8	-	(2.0)	(3.8)
31 Average Growth/(Decline)	562.6	28.3	(0.0)	(1.2)	3.5

ADJUSTMENT 2 - DECLINING USAGE REVENUE ADJUSTMENT - PRESENT RATES
FOR THE TEST YEAR ENDING DECEMBER 31, 2018

	<u>Residential</u>	<u>Commercial</u>
1 Actual Normalized Bills	652,728	56,712
2 Actual 2017 Daily Usage (Gallons)	115.73	817.54
3 Projected Daily Usage in gallons - 2018	113.53	808.25
4 Difference in Daily Usage - Line 3 - Line 2	(2.20)	(9.29)
5 Difference in 1000 gallon Monthly Usage - Line 4 X 30 divided by 1000	(0.07)	(0.28)
6 Annual Declining Usage Adjustment - Line 1 X Line 5	(43,155)	(15,810)
7 Priced At First Block	(43,155)	(15,810)
8 First Block Under Present Rates	\$ 7,7506	\$ 7,7506
9 Adjustment Under Present Rates	\$ (334,479)	\$ (122,536)

DECLINING USAGE REVENUE ADJUSTMENT - PRESENT RATES
FOR THE TEST YEAR ENDING DECEMBER 31, 2019

	<u>Residential</u>	<u>Commercial</u>
10 Actual Normalized Bills	652,728	56,712
11 Actual 2017 Daily Usage (Gallons)	115.73	817.54
12 Projected Daily Usage in gallons - 2019	111.32	798.96
13 Difference in Daily Usage - Line 11 - Line 12	(4.41)	(18.58)
14 Difference in 1000 gallon Monthly Usage - Line 13 X 30 divided by 1000	(0.13)	(0.56)
15 Annual Declining Usage Adjustment - Line 10 X Line 5	(86,356)	(31,611)
16 Priced At First Block	(86,356)	(31,611)
17 First Block Under Present Rates	\$ 7,7506	\$ 7,7506
18 Adjustment Under Present Rates	\$ (669,310)	\$ (245,006)
19 Incremental Adjustment over 2018	\$ (334,831)	\$ (122,471)

SUEZ WATER PENNSYLVANIA INC
MAHONING TOWNSHIP

APPLICATION OF PRESENT RATES AND PROPOSED RATES TO CONSUMPTION ANALYSIS
YEAR ENDED DECEMBER 31, 2017

Line No	Rate Block 100 Gallons (1)	Number Of Bills (2)	Present Consumption (3)	Test Year Rate (4)	Revenue (5)	Proposed Consumption (6)	Proposed Rate (7)	Proposed Revenue (8)	
<u>Residential - Quarterly</u>									
1	Minimum								
2	5/8	4,416	22,136	\$ 64 13	\$ 283,198	-	\$ 45 00	\$ 198,720	
3	3/4	6	14	80 85	485	-	45 00	270	
4	1	20	93	98 87	1,977	-	93 27	1,865	
5	Subtotal	4,442	22,242		285,660	-		200,855	
6									
7	Usage Above the Minimum	-	25,638	5 8300	149,471	-			
8	All Usage	-	-			47,881	7 7506	371,103	
9	Subtotal	-	25,638		149,471	47,881		371,103	
10									
11	Total Residential	4,442	47,881		\$ 435,131	47,881		\$ 571,959	
12									
13									
14	<u>Commercial - Quarterly</u>								
15	Minimum								
16	5/8	1,125	5,457	\$ 64 13	\$ 72,146	-	\$ 45 00	\$ 50,625	
17	3/4	79	474	80 85	6,387	-	45 00	3,555	
18	1	35	335	98 87	3,460	-	93 27	3,264	
19	1 1/2	15	307	134 84	2,023	-	186 54	2,798	
20	2	21	582	170 87	3,588	-	319 53	6,710	
21	4	9	558	314 89	2,834	-	999 00	8,991	
22	6	20	1,173	458 91	9,178	-	1,998 00	39,960	
23									
24	Subtotal	1,304	8,886		99,616	-		115,904	
25									
26									
27	Usage Above the Minimum	-	30,554	5 8300	178,130	-			
28	First Block (First 25,000)	-	-		-	12,316	7 7506	95,456	
29	Second Block (Over 25,000)	-	-		-	27,124	5 4321	147,340	
30	Subtotal	-	30,554		178,130	39,440		242,797	
31									
32	Total Class	1,304	39,440		\$ 277,746	39,440		\$ 358,700	
33									
34									
35	Total - Mahoning Township	5,746	87,321		\$ 712,877	87,321		930,659	

ADJUSTMENT 4 - CUSTOMER GROWTH REVENUE ADJUSTMENT UNDER PRESENT RATES FOR TRUNK LINE
FOR THE TEST YEARS ENDING DECEMBER 31, 2017, 2018 AND 2019

	<u>Residential</u>	<u>Total</u>
<u>FPPTY Customer Growth Calculation - Trunk Line</u>		
1 Projected Estimated Increase in Customers	252	252
2 Annualized Bills	3,024	3,024
3 Projected Daily Usage in gallons (a)	111 32	111
4 Monthly Volumes per Normalization (1000 Gallons) Line 3 X30 /1000	3 34	
6 HTY Customer Annualized Growth Volumes (Line 4 X Line 5 / 2)	10,100	10,100
Pnced At First Block	10,100	10,100
Pnced At Second Block		-
<u>FPPTY Customer Growth Revenue Calculation - Trunk Line</u>		
7 Average Service Charge	\$ 13 75	
8 Revenue From Service Charge (Line 7 X Line 5)	\$ 41,580	\$ 41,580
9 Volume Charge - First Block	7 7506	
Volume Charge - Second Block		
10 Revenue from Volumetric Charge (Line 9 X Line 6)		
Pnced At First Block	\$ 78,282	\$ 78,282
Pnced At Second Block		
11 Total FPPTY Adjustment (Line 8 + Line 10)	<u>\$ 119,862</u>	<u>\$ 119,862</u>

SUEZ WATER PENNSYLVANIA INC.

COMPARISON OF BILLS UNDER PRESENT AND PROPOSED RATES
RESIDENTIAL - MONTHLY
5/8 INCH METERS

CONSUMPTION GALLONS (1)	BILLS UNDER		INCREASE	
	PRESENT RATES* (2)	PROPOSED RATES (3)	AMOUNT (4)	PERCENT (5)
0	\$ 14.78	\$ 15.00	\$ 0.22	1.48%
1,000	\$ 23.11	\$ 24.67	\$ 1.56	6.74%
2,000	\$ 31.45	\$ 34.34	\$ 2.89	9.21%
3,000	\$ 39.78	\$ 44.01	\$ 4.23	10.64%
3,000	\$ 39.78	\$ 44.01	\$ 4.23	10.64%
4,000	\$ 48.11	\$ 53.68	\$ 5.57	11.58%
5,000	\$ 56.44	\$ 63.35	\$ 6.91	12.24%
6,000	\$ 64.77	\$ 73.02	\$ 8.25	12.73%
7,000	\$ 73.10	\$ 82.69	\$ 9.59	13.11%
8,000	\$ 81.44	\$ 92.36	\$ 10.92	13.41%
9,000	\$ 89.77	\$ 102.03	\$ 12.26	13.66%
10,000	\$ 98.10	\$ 111.70	\$ 13.60	13.86%
11,000	\$ 106.43	\$ 121.37	\$ 14.94	14.04%
12,000	\$ 114.76	\$ 131.04	\$ 16.28	14.18%
13,000	\$ 123.10	\$ 140.71	\$ 17.61	14.31%
14,000	\$ 131.43	\$ 150.38	\$ 18.95	14.42%
15,000	\$ 139.76	\$ 160.05	\$ 20.29	14.52%
16,000	\$ 148.09	\$ 169.72	\$ 21.63	14.60%
17,000	\$ 156.42	\$ 179.39	\$ 22.97	14.68%
18,000	\$ 164.76	\$ 189.06	\$ 24.30	14.75%
19,000	\$ 173.09	\$ 198.73	\$ 25.64	14.81%
20,000	\$ 181.42	\$ 208.40	\$ 26.98	14.87%
25,000	\$ 223.08	\$ 256.75	\$ 33.67	15.09%
30,000	\$ 264.74	\$ 305.10	\$ 40.36	15.25%
35,000	\$ 306.40	\$ 353.45	\$ 47.05	15.36%
40,000	\$ 348.06	\$ 401.80	\$ 53.74	15.44%
45,000	\$ 389.72	\$ 450.15	\$ 60.43	15.51%
50,000	\$ 431.38	\$ 498.50	\$ 67.12	15.56%
60,000	\$ 514.69	\$ 595.20	\$ 80.51	15.64%
70,000	\$ 598.01	\$ 691.90	\$ 93.89	15.70%
80,000	\$ 681.33	\$ 788.60	\$ 107.27	15.74%
90,000	\$ 764.65	\$ 885.30	\$ 120.65	15.78%
100,000	\$ 847.97	\$ 982.00	\$ 134.03	15.81%
110,000	\$ 931.29	\$ 1,078.70	\$ 147.41	15.83%
120,000	\$ 1,014.61	\$ 1,175.40	\$ 160.79	15.85%
130,000	\$ 1,097.93	\$ 1,272.10	\$ 174.17	15.86%
140,000	\$ 1,181.25	\$ 1,368.80	\$ 187.55	15.88%
150,000	\$ 1,264.57	\$ 1,465.50	\$ 200.93	15.89%
160,000	\$ 1,347.88	\$ 1,562.20	\$ 214.32	15.90%
170,000	\$ 1,431.20	\$ 1,658.90	\$ 227.70	15.91%
180,000	\$ 1,514.52	\$ 1,755.60	\$ 241.08	15.92%

** Present rates include 7.50% DSIC.

SUEZ WATER PENNSYLVANIA INC.

COMPARISON OF BILLS UNDER PRESENT AND PROPOSED RATES
COMMERCIAL - MONTHLY
5/8 INCH METERS

CONSUMPTION GALLONS (1)	BILLS UNDER		INCREASE	
	PRESENT RATES* (2)	PROPOSED RATES (3)	AMOUNT (4)	PERCENT (5)
0	\$ 14.78	\$ 15.00	\$ 0.22	1.48%
1,000	\$ 23.11	\$ 24.67	\$ 1.56	6.74%
5,000	\$ 56.44	\$ 63.35	\$ 6.91	12.24%
10,000	\$ 98.10	\$ 111.70	\$ 13.60	13.86%
11,000	\$ 106.43	\$ 121.37	\$ 14.94	14.04%
12,000	\$ 114.76	\$ 131.04	\$ 16.28	14.18%
13,000	\$ 123.10	\$ 140.71	\$ 17.61	14.31%
14,000	\$ 131.43	\$ 150.38	\$ 18.95	14.42%
15,000	\$ 139.76	\$ 160.05	\$ 20.29	14.52%
16,000	\$ 148.09	\$ 169.72	\$ 21.63	14.60%
17,000	\$ 156.42	\$ 179.39	\$ 22.97	14.68%
18,000	\$ 164.76	\$ 189.06	\$ 24.30	14.75%
19,000	\$ 173.09	\$ 198.73	\$ 25.64	14.81%
20,000	\$ 181.42	\$ 208.40	\$ 26.98	14.87%
25,000	\$ 223.08	\$ 256.75	\$ 33.67	15.09%
30,000	\$ 252.28	\$ 292.26	\$ 39.98	15.85%
35,000	\$ 281.47	\$ 327.77	\$ 46.30	16.45%
40,000	\$ 310.67	\$ 363.28	\$ 52.61	16.93%
45,000	\$ 339.87	\$ 398.79	\$ 58.92	17.34%
50,000	\$ 369.07	\$ 434.30	\$ 65.23	17.68%
60,000	\$ 427.46	\$ 505.32	\$ 77.86	18.21%
70,000	\$ 485.86	\$ 576.34	\$ 90.48	18.62%
80,000	\$ 544.25	\$ 647.36	\$ 103.11	18.95%
90,000	\$ 602.65	\$ 718.38	\$ 115.73	19.20%
100,000	\$ 661.04	\$ 789.40	\$ 128.36	19.42%
110,000	\$ 719.44	\$ 860.42	\$ 140.98	19.60%
120,000	\$ 777.83	\$ 931.44	\$ 153.61	19.75%
130,000	\$ 836.23	\$ 1,002.46	\$ 166.23	19.88%
140,000	\$ 894.62	\$ 1,073.48	\$ 178.86	19.99%
150,000	\$ 953.02	\$ 1,144.50	\$ 191.48	20.09%
160,000	\$ 1,011.41	\$ 1,215.52	\$ 204.11	20.18%
170,000	\$ 1,069.81	\$ 1,286.54	\$ 216.73	20.26%
180,000	\$ 1,128.20	\$ 1,357.56	\$ 229.36	20.33%

** Present rates include 7.50% DSIC.

SUEZ WATER PENNSYLVANIA INC.

COMPARISON OF BILLS UNDER PRESENT AND PROPOSED RATES
INDUSTRIAL - MONTHLY
2 INCH METERS

CONSUMPTION GALLONS (1)	BILLS UNDER		INCREASE	
	PRESENT RATES* (2)	PROPOSED RATES (3)	AMOUNT (4)	PERCENT (5)
0	\$ 114.50	\$ 106.51	\$ (7.99)	-6.98%
1,000	\$ 122.83	\$ 116.18	\$ (6.65)	-5.41%
5,000	\$ 156.16	\$ 154.86	\$ (1.30)	-0.83%
10,000	\$ 197.82	\$ 203.21	\$ 5.39	2.73%
15,000	\$ 239.48	\$ 251.56	\$ 12.08	5.05%
20,000	\$ 281.14	\$ 299.91	\$ 18.77	6.68%
25,000	\$ 322.80	\$ 348.26	\$ 25.46	7.89%
30,000	\$ 353.77	\$ 388.01	\$ 34.24	9.68%
35,000	\$ 384.73	\$ 427.76	\$ 43.03	11.18%
40,000	\$ 415.70	\$ 467.51	\$ 51.81	12.46%
45,000	\$ 446.67	\$ 507.26	\$ 60.59	13.56%
50,000	\$ 477.64	\$ 547.01	\$ 69.37	14.52%
100,000	\$ 787.34	\$ 944.51	\$ 157.17	19.96%
150,000	\$ 1,097.04	\$ 1,342.01	\$ 244.97	22.33%
200,000	\$ 1,406.73	\$ 1,739.51	\$ 332.78	23.66%
225,000	\$ 1,561.58	\$ 1,938.26	\$ 376.68	24.12%
250,000	\$ 1,716.43	\$ 2,137.01	\$ 420.58	24.50%
275,000	\$ 1,871.28	\$ 2,335.76	\$ 464.48	24.82%
300,000	\$ 2,026.13	\$ 2,534.51	\$ 508.38	25.09%
350,000	\$ 2,335.82	\$ 2,932.01	\$ 596.19	25.52%

** Present rates include 7.50% DSIC.

SUEZ WATER PENNSYLVANIA INC.

COMPARISON OF BILLS UNDER PRESENT AND PROPOSED RATES
LARGE INDUSTRIAL - MONTHLY
6 INCH METERS

CONSUMPTION GALLONS (1)	BILLS UNDER		INCREASE	
	PRESENT RATES* (2)	PROPOSED RATES (3)	AMOUNT (4)	PERCENT (5)
7,000,000	\$ 27,780.15	\$ 31,466.00	\$ 3,685.85	13.27%
8,000,000	31,654.99	35,866.00	4,211.01	13.30%
9,000,000	35,529.83	40,266.00	4,736.18	13.33%
10,000,000	39,404.66	44,666.00	5,261.34	13.35%
11,000,000	43,279.50	49,066.00	5,786.50	13.37%
12,000,000	47,154.34	53,466.00	6,311.66	13.39%
13,000,000	51,029.18	57,866.00	6,836.83	13.40%
14,000,000	54,905.09	62,266.00	7,360.91	13.41%
15,000,000	58,778.85	66,666.00	7,887.15	13.42%
16,000,000	62,653.69	71,066.00	8,412.31	13.43%

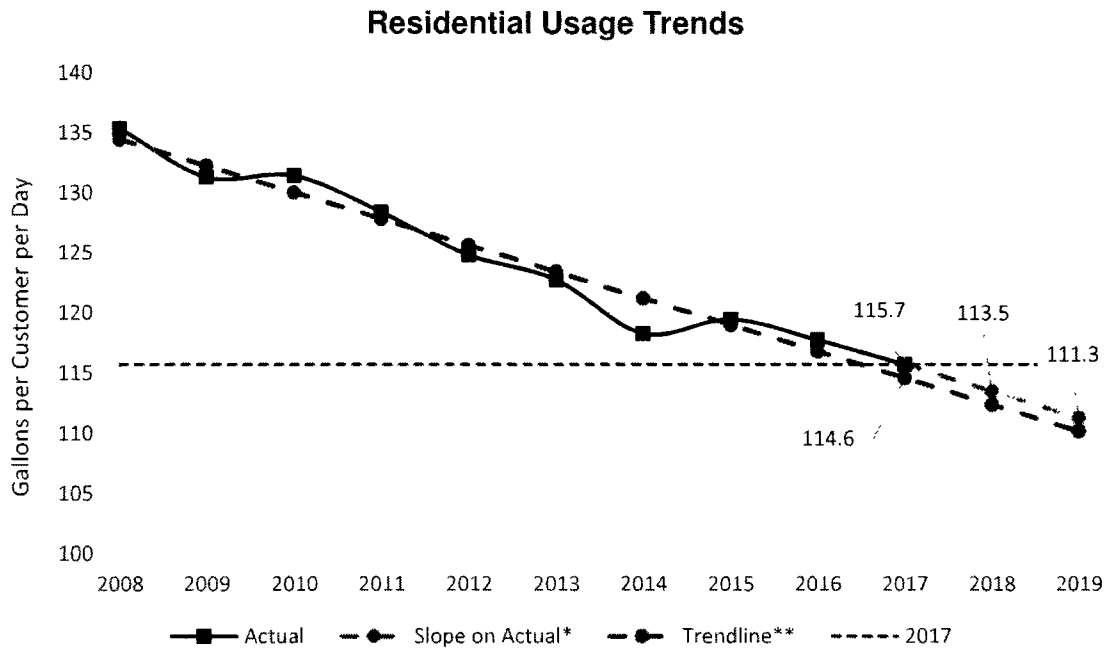
** Present rates include 7.50% DSIC.

SUEZ WATER PENNSYLVANIA INC.

COMPARISON OF BILLS UNDER PRESENT AND PROPOSED RATES
PUBLIC - MONTHLY
5/8 INCH METERS

CONSUMPTION 100 GALLONS (1)	BILLS UNDER		INCREASE	
	PRESENT RATES* (2)	PROPOSED RATES (3)	AMOUNT (4)	PERCENT (5)
0	\$ 14.78	\$ 15.00	\$ 0.22	1.48%
1,000	\$ 23.11	\$ 24.67	\$ 1.56	6.74%
2,000	\$ 31.45	\$ 34.34	\$ 2.89	9.21%
3,000	\$ 39.78	\$ 44.01	\$ 4.23	10.64%
4,000	\$ 48.11	\$ 53.68	\$ 5.57	11.58%
5,000	\$ 56.44	\$ 63.35	\$ 6.91	12.24%
10,000	\$ 98.10	\$ 111.70	\$ 13.60	13.86%
15,000	\$ 139.76	\$ 160.05	\$ 20.29	14.52%
20,000	\$ 181.42	\$ 208.40	\$ 26.98	14.87%
25,000	\$ 223.08	\$ 256.75	\$ 33.67	15.09%
30,000	\$ 252.28	\$ 292.26	\$ 39.98	15.85%
35,000	\$ 281.47	\$ 327.77	\$ 46.30	16.45%
40,000	\$ 310.67	\$ 363.28	\$ 52.61	16.93%
45,000	\$ 339.87	\$ 398.79	\$ 58.92	17.34%
50,000	\$ 369.07	\$ 434.30	\$ 65.23	17.68%
100,000	\$ 661.04	\$ 789.40	\$ 128.36	19.42%
150,000	\$ 953.02	\$ 1,144.50	\$ 191.48	20.09%
200,000	\$ 1,244.99	\$ 1,499.60	\$ 254.61	20.45%
225,000	\$ 1,390.98	\$ 1,677.15	\$ 286.17	20.57%
250,000	\$ 1,536.97	\$ 1,854.70	\$ 317.73	20.67%
275,000	\$ 1,682.96	\$ 2,032.25	\$ 349.29	20.75%
300,000	\$ 1,828.94	\$ 2,209.80	\$ 380.86	20.82%
350,000	\$ 2,120.92	\$ 2,564.90	\$ 443.98	20.93%

** Present rates include 7.50% DSIC.



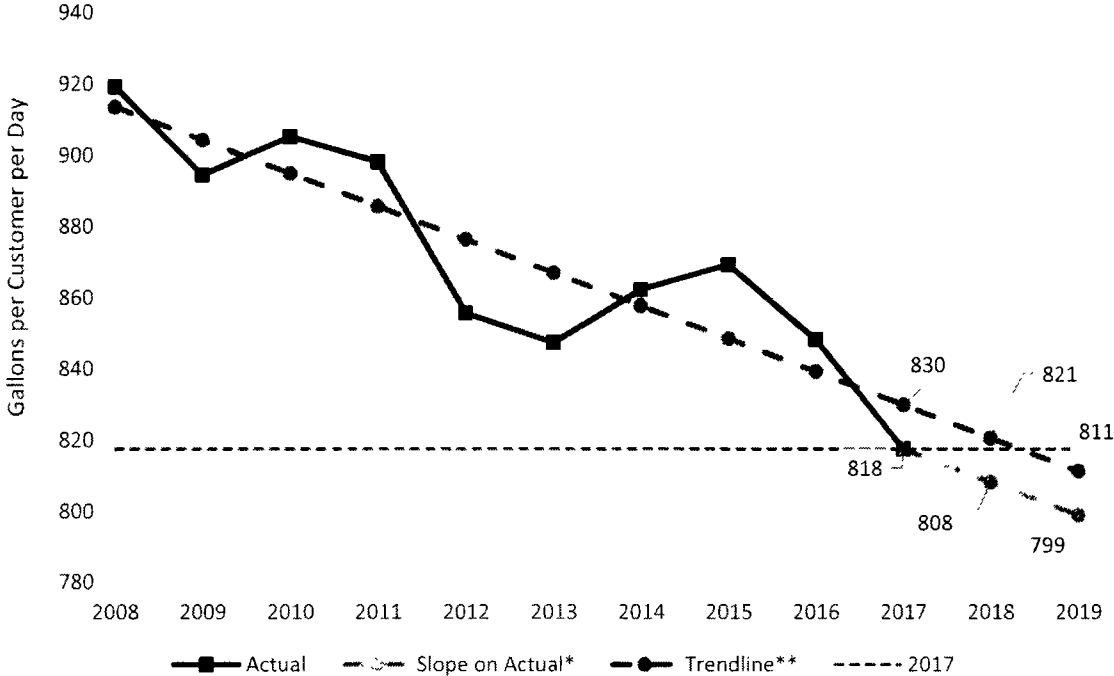
Residential Usage Trends
(gallons per customer per day)

Year	Actual	Slope on Actual*	Trendline**
2008	135.4		134.5
2009	131.3		132.3
2010	131.5		130.0
2011	128.4		127.8
2012	124.8		125.6
2013	122.8		123.4
2014	118.3		121.2
2015	119.5		119.0
2016	117.8		116.8
2017	115.7	115.7	114.6
2018		113.5	112.4
2019		111.3	110.2

*Slope on Actual means the slope coefficient of 2.205 is applied as a decrease from the 2017 actual billed usage to project 2018 usage per customer.

**Trendline is a line fit using the resulting regression coefficients of 4,562 (intercept) and- 2.205 (slope).

Commercial Usage Trends



Commercial Usage Trends
(gallons per customer per day)

Year	Actual	Slope on Actual*	Trendline**
2008	919		914
2009	894		904
2010	905		895
2011	898		886
2012	856		876
2013	847		867
2014	862		858
2015	869		849
2016	848		839
2017	818	818	830
2018		808	821
2019		799	811

*Slope on Actual means the slope coefficient of -9.29 is applied as a decrease from the 2017 actual billed usage to project 2018 usage per customer.

**Trendline is a line fit using the resulting regression coefficients of 19,570 (intercept) and -9.29 (slope).

SUEZ WATER PENNSYLVANIA INC.

HARRISBURG, PENNSYLVANIA

PRO FORMA EXPENSE ADJUSTMENTS

AS OF DECEMBER 31, 2019



Excellence Delivered As Promised

Line No.	Account Number	Utility Operating Expenses	Adjustment No.	12-Months Ending 12/31/2017	Future Test Year Adjustments	Future Test Year 12/31/2018	Fully Projected Future Test Year Adjustments Present Rates	Fully Projected Year Under Present Rates 12/31/2019	Fully Projected Future Test Year Adjustments Proposed Rates	Fully Projected Future Test Year Under Proposed Rates 12/31/2019
1	601 0	Labor Expense	1	\$ 4,579,937	\$ 731,517	\$ 5,311,453	\$ 147,488	\$ 5,458,942	\$	5,458,942
2	604 0	Employee Group Health & Life	2	1,323,689	83,467	1,407,156	32,365	1,439,521		1,439,521
3	604 0	Employee Pension Benefits	3	1,425,022	(15,433)	1,409,589	32,421	1,442,010		1,442,010
4	604 0	Employee Post Retirement Benefits Other than Pension	4	(457,246)	(73,478)	(530,724)	(12,207)	(542,931)		(542,931)
5	604 0	Other Employee Benefits	5	215,054	43,880	258,934	7,126	266,060		266,060
6	610 0	Purchased Water	6	68,621	7,555	76,176	106,752	182,928		182,928
7	615 0	Purchased Power	7	1,242,836	292,538	1,535,374	35,314	1,570,688		1,570,688
8	616 0	Fuel for Power Production	8	184,165	(161,001)	23,163	533	23,696		23,696
9	618 0	Chemicals	9	540,682	45,366	586,048	13,479	599,527		599,527
10	620 0	Materials and Supplies	10	254,476	22,590	277,066	6,373	283,439		283,439
11	634 0	Management and Service Fees	11	4,921,757	367,524	5,289,281	70,216	5,359,497		5,359,497
12	635 0	Lab Testing Fees	12	114,698	(32,810)	81,888	1,653	83,542		83,542
13	636 0	Outside Contractors	13	748,644	231,111	979,755	167,359	1,147,114		1,147,114
14	636 0	Outside Professional Services	14	64,321	2,339	66,660	1,533	68,193		68,193
15	641 0	Rental - Building/Real Property	15	60,330	146	60,476	-	60,476		60,476
16	642 0	Rental of Equipment	16	49,175	1,045	50,220	1,155	51,375		51,375
17	650 0	Transportation Expense	17	407,033	56,863	463,897	96,426	560,322		560,322
18	657 0	Prop& Gen Liab Insurance	18	4,732	101	4,832	103	4,935		4,935
19	658 0	Worker Compensation	19	102,384	5,844	108,228	2,489	110,717		110,717
20	660 0	Advertising	20	3,517	75	3,592	83	3,674		3,674
21	666-667	Rate Case Expense - Amort	21	140,080	(11,674)	128,407	60,593	189,000		189,000
22	666-667	Regulatory Commission Expense	22	198,665	21,215	219,880	18,784	238,664	31,413	270,077
23	670 0	Bad Debt Expense	23	155,640	(298)	155,342	13,271	168,612	22,193	190,805
24	675 0	Fringe Benefit Expense Transfer	24	(1,059,720)	(15,685)	(1,075,405)	(30,883)	(1,106,288)		(1,106,288)
25	675 6	Office Expense and Utilities	25	446,337	(26,796)	419,541	121,353	540,894		540,894
26	675 9	Postage and Air Freight Expense	26	354,308	4,256	358,563	7,795	366,358		366,358
27	Various	Other O&M	27	143,806	55,547	199,353	4,585	203,938		203,938
28		Adjustments for Mahoning Twp Acquisition	28	\$ -	\$ -	\$ -	\$ 430,783	\$ 430,783		\$ 430,783
29		Total Operation and Maintenance Expenses		\$ 16,232,944	\$ 1,635,802	\$ 17,868,746	\$ 1,336,942	\$ 19,205,688	\$ 53,605	\$ 19,259,294
30										
31		Inflation Rate Calculator	29		2.13%		2.30%			
32										
33		Taxes Other Than Income								
34		Real Estate Tax	30	\$ 270,553	\$ 40,472	\$ 311,025	\$ 7,154	\$ 318,178	\$ -	\$ 318,178
35		Payroll	31	560,626	57,812	618,438	31,775	650,213	-	650,213
36										
37		Total Taxes Other Than Income		\$ 831,179	\$ 98,284	\$ 929,463	\$ 38,929	\$ 968,391	\$ -	\$ 968,391
38										
39		Depreciation Expense	32	\$ 7,361,991	\$ 802,796	\$ 8,164,788	\$ 558,174	\$ 8,722,962	\$	8,722,962
40		Amortization of Acquisition Adjustment		\$ 57,744	\$	\$ 57,744	\$	\$ 57,744	\$	57,744
41		Amortization of Regulatory Liability	32		\$ (265,198)	\$ (265,198)	\$	\$ (265,198)	\$	(265,198)
42		Income Taxes	34	\$ 6,832,581	\$ (3,315,302)	\$ 3,517,279	\$ 215,509	\$ 3,732,788	\$ 1,786,341	\$ 5,519,128
43										
44		Total		\$ 31,316,439	\$ (778,420)	\$ 30,272,821	\$ 2,149,554	\$ 32,422,375	\$ 1,839,946	\$ 34,262,321

Line No.	Description	12 Months Ended 12/31/2017	Future Test Year	Fully Projected Future Test Year
1	Labor Expense - net of capitalized/transferred in/out	\$ 4,579,937	\$ 5,311,453 (a)	\$ 5,458,942 (a)
2				
3	Total Labor Expense	<u>\$ 4,579,937</u>	<u>\$ 5,311,453</u>	<u>\$ 5,458,942</u>
4				
5	Adjustment		\$ 731,517	\$ 147,488
6				
7	Reference Notes:			
8	(a) See Workpaper CEH-2.1			
9				

Line No.	12 Months Ended 12/31/2017	Future Test Year	Fully Projected Future Test Year
1	\$ 1,323,689	\$ 1,407,156	\$ 1,439,521
2			
3	Adjustment	\$ 83,467	\$ 32,365
4			
5		Future Test	Fully Projected
6	Description	Year	Future Test Year
7			
8	Medical Insurance	\$ 1,272,585 (a)	\$ 1,301,855 (b)
9			
10	Dental	76,429 (a)	78,187 (b)
11			
12	Group Life Insurance	58,142 (a)	59,480 (b)
13			
14	Total Employee Pensions & Benefits	\$ 1,407,156	\$ 1,439,521
15			
16		Average	Total Employees with
17	New Employees Adjustment	New Employees	Cost of Coverage
18	2018 Medical	5	\$ 15,112
19	2018 Dental	5	835
20	2018 Group Life		
21	Basic STD	5	34
22	Basic LTD	5	294
23	Basic Life 1X annual	5	114
24	Basic Life 3 X annual	5	322
25			
26	Inflation Rate:		
27	Fully Projected Future Test Year	2.300%	
28			
29	Reference Notes:		
30	(a) The company provided Future Test Year Employee Group Health and Life Insurance expenses are		
31	adjusted for the five new employees in 2018. The new employee adjustment takes the number		
32	of new hires, multiplied by the average Cost of Coverage of existing employees and the		
33	percentage of existing employees with coverage, and added to the		
34	Future Test Year Insurance expenses.		
35	(b) Based upon Future Test Year cost with Fully Projected Future Test Year inflation rate.		

Line No.	Description	12 Months Ended 12/31/2017	Future Test Year	Fully Projected Future Test Year
1	Employee Pension Benefits	\$ 1,425,022	\$ 1,409,589 (a)	\$ 1,442,010 (b)
2				
3	Total Employee Pension Benefits	<u>\$ 1,425,022</u>	<u>\$ 1,409,589</u>	<u>\$ 1,442,010</u>
4				
5	Adjustment		\$ (15,433)	\$ 32,421
6				
7	<u>Inflation Rate:</u>			
8	Fully Projected Future Test Year	2.300%		
9				
10	<u>Reference Notes:</u>			
12	(a) Used 2018 estimated ASC 715-30 Net Periodic Pension Cost provided by Actuary.			
13	(b) Based upon Future Test Year cost with Fully Projected Future Test Year inflation rate.			

Line No.	Description	12 Months Ended 12/31/2017	Future Test Year	Fully Projected Future Test Year
1	Employee PEBOP Expense	\$ (457,246)	\$ (530,724)	\$ (542,931)
2				
3	Total Employee PEBOP Expense	<u>\$ (457,246)</u>	<u>\$ (530,724)</u>	<u>\$ (542,931)</u>
4				
5	Adjustment		\$ (73,478)	\$ (12,207)
6				
7	<u>Inflation Rate:</u>			
8	Fully Projected Future Test Year	2.300%		
9				
10	<u>Reference Notes:</u>			
11	(a) Used 2018 estimated ASC 715-30 Net Periodic Pension Cost provided by Actuary.			
12	(b) Based upon Future Test Year cost with Fully Projected Future Test Year inflation rate.			

Line No.	Description	12 Months Ended 12/31/2017	Future Test Year	Fully Projected Future Test Year
1	401K Matching	\$ 201,925	\$ 245,526 (a)	\$ 252,344 (b)
2				
3	Other Benefits	\$ 13,129	\$ 13,408 (c)	\$ 13,716 (d)
4				
5	Total 401K Matching and Other Benefits	<u>\$ 215,054</u>	<u>\$ 258,934</u>	<u>\$ 266,060</u>
6				
7	Adjustment		\$ 43,880	\$ 7,126
8				
9				
10	Year	Gross Salary	401K Contribution (%)	
11				
12	2018	7,908,847	3.10%	
13	2019	8,128,460	3.10%	
14				
15	Inflation Rate:			
16	Future Test Year	2.125%		
17	Fully Projected Future Test Year	2.300%		
18				
19	Reference Notes:			
20	(a) 401K Matching adjustment takes the Future Test Year's Gross Salary, multiplied by the			
21	Historic Test Year's 401K contribution percentage.			
22	(b) 401K Matching adjustment takes the Fully Projected Future Test Year's Gross Salary,			
23	multiplied by the Historic Test Year's 401K contribution percentage.			
24	(c) Based upon the Historic Test Year with the Future Test Year inflation rate.			
25	(d) Based upon the Future Test Year with the Fully Projected Future Test Year inflation rate.			

Line No.	Description	12 Months Ended 12/31/2017	Future Test Year	Fully Projected Future Test Year
1	Purchased Water	\$ 68,621	\$ 76,176 (a)	\$ 77,928 (b)
2				
3	Additional Purchased Water From Susquehanna Area Regional Airport Authority (SARAA)			105,000 (c)
4				
5	Total Purchased Water	<u>\$ 68,621</u>	<u>\$ 76,176</u>	<u>\$ 182,928</u>
6				
7	Adjustment		\$ 7,555	\$ 1,752
8				
9				
10		Cost of Water	Consumption 1000 Gal	
11	Year			
12	2015	\$ 84,246	16,208	
13	2016	\$ 70,906	12,811	
14	2017	\$ 68,621	13,612	
15	3 Year Average	\$ 74,591	14,210	
16				
17	Inflation Rate:			
18	Future Test Year	2 125%		
19	Fully Projected Future Test Year	2 300%		
20				
21	Reference Notes:			
22	(a) Based upon three year average with Future Test Year inflation rate			
23	(b) Based upon Future Test Year cost with Fully Projected Future Test Year inflation rate			
24	(c) The Company will begin purchasing water from SARAA in 2019 with a minimum take of \$105,000			

Line No.	Description	12 Months Ended 12/31/2017	Future Test Year	Fully Projected Future Test Year
1	Purchased Power Expense	\$ 1,242,836	\$ 1,535,374 (a)	\$ 1,570,688 (b)
2				
3	Adjustment		\$ 292,538	\$ 35,314
4				
5		Power		Production
6	Year	Expense	kWh	(MG)
7	2015	\$ 1,516,207	18,781,378	6450.5071
8	2016	\$ 1,589,719	19,101,533	6414.6870
9	2017	\$ 1,404,353	18,124,940	6125.9850
10				
11	3 Year Average	\$ 1,503,426	18,669,284	6330.3930
12				
13	Adjustment Factor:			
14	Future Test Year	2.125%		
15	Fully Projected Future Test Year	2.300%		
16				
17	Reference Notes:			
18	(a) Based upon three year average with Future Test Year inflation rate.			
19	(b) Based upon Future Test Year cost with Fully Projected Future Test Year inflation rate.			

Line No.	Description	12 Months Ended 12/31/2017	Future Test Year	Fully Projected Future Test Year
1	Fuel - Power Production	\$ 184,165	\$ 23,163 (a)	\$ 23,696 (b)
2				
3	Total Fuel for Power Production	<u>\$ 184,165</u>	<u>\$ 23,163</u>	<u>\$ 23,696</u>
4				
5	Adjustment		\$ (161,001)	\$ 533
6				
15	<u>Inflation Rate:</u>			
16	Future Test Year	2.125%		
17	Fully Projected Future Test Year	2.300%		
18				
19	<u>Reference Notes:</u>			
20	(a) Based upon historic test year Diesel Fuel for Generator expense with Future Test Year			
21	inflation rate.			
	(b) Based upon Future Test Year expense with Fully Projected Future Test Year inflation rate.			

Line No.	Description	12 Months Ended 12/31/2017	Future Test Year	Fully Projected Future Test Year
1	Chemical Expense	\$ 540,682	\$ 586,048 (a)	\$ 599,527 (b)
2				
3	Total Chemical Expense	<u>\$ 540,682</u>	<u>\$ 586,048</u>	<u>\$ 599,527</u>
4				
5	Adjustment		\$ 45,366	\$ 13,479
6				
7				
8	<u>Year</u>	<u>Chemical Expense</u>		
9	2015	\$ 597,781.13		
10	2016	583,097.19		
11	2017	540,682.11		
12				
13	3 Year Average	\$ 573,853.48		
14				
15	<u>Inflation Rate:</u>			
16	Future Test Year		2.125%	
17	Fully Projected Future Test Year		2.300%	
18				
19	<u>Reference Notes:</u>			
20	(a) Based upon three year average with Future Test Year inflation rate.			
21	(b) Based upon Future Test Year cost with Fully Projected Future Test Year inflation rate.			

Line No.	Description	12 Months Ended 12/31/2017	Future Test Year	Fully Projected Future Test Year
1	Materials and Supplies	\$ 254,476	\$ 277,066 (a)	\$ 283,439 (b)
2				
3	Total Materials and Supplies	<u>\$ 254,476</u>	<u>\$ 277,066</u>	<u>\$ 283,439</u>
4				
5	Adjustment		\$ 22,590	\$ 6,373
6				
7				
8				
9	<u>Year</u>	<u>Materials and Supplies Expense</u>		
10	2015	\$ 324,181		
11	2016	235,247		
12	2017	254,476		
13				
14	3 Year Average	\$ 271,301		
15				
16	Inflation Rate:			
17	Future Test Year	2.125%		
18	Fully Projected Future Test Year	2.300%		
19				
20	Reference Notes:			
21	(a) Based upon three year average with Future Test Year inflation rate.			
22	(b) Based upon Future Test Year cost with Fully Projected Future Test Year inflation rate.			

Line No.	Description	12 Months Ended 12/31/2017	Future Test Year	Fully Projected Future Test Year
1	Management & Service Fees	\$ 4,509,809	\$ 5,289,281 (a)	\$ 5,359,497 (b)
	Non-Recoverable Management Fees (c)	\$ 411,947 (b)	\$ -	\$ -
2				
3	Total Management & Service Fees	<u>\$ 4,921,757</u>	<u>\$ 5,289,281</u>	<u>\$ 5,359,497</u>
4				
5	Adjustment		\$ 367,524	\$ 70,216
6				
11	Reference Notes:			
12	(a) Please see MFR III-06			
13	(b) Non-recoverable for rate making purposes.			
14				
15				

Line No.	Description	12 Months Ended 12/31/2017	Future Test Year	Fully Projected Future Test Year
1	Lab Testing Fees	\$ 114,698	\$ 81,888 (a)	\$ 83,542 (b)
2				
3	Total Lab Testing Fees	<u>\$ 114,698</u>	<u>\$ 81,888</u>	<u>\$ 83,542</u>
4				
5	Adjustment		\$ (32,810)	\$ 1,653
6				
7		Lab Testing	UCMR4	
8	<u>Year</u>	<u>Fees</u>	<u>Testing Fee</u>	
9	2015	\$ 71,150		
10	2016	69,635		
11	2017	114,698		
12				
13	2015 and 2016 Average	70,392	10,000	
14				
15	Inflation Rate:			
16	Future Test Year	2.125%		
17	Fully Projected Future Test Year	2.300%		
18				
19	Reference Notes:			
20	(a) Based upon two year average with Future Test Year inflation rate, plus the UCMR4			
21	testing fee normalized over three years.			
22	(b) Based upon Future Test Year cost with Fully Projected Future Test Year inflation rate.			

Line No.	Description	12 Months Ended 12/31/2017	Future Test Year	Fully Projected Future Test Year
1	Outside Contractors	\$ 748,644	\$ 754,755 (a)	\$ 772,114 (b)
2				
3	Additional Convenience Fees			150,000 (c)
4	NRW Study		150,000	150,000 (d)
5	Inventory Process Study		75,000	75,000 (d)
6				
7	Total Outside Contractors	<u>\$ 748,644</u>	<u>\$ 979,755</u>	<u>\$ 1,147,114</u>
8				
9	Adjustment		\$ 231,111	\$ 167,359
10				
11		Outside Contractor's		
12	<u>Year</u>	<u>Expense</u>		
13	2016	729,456		
14	2017	<u>748,644</u>		
15				
16	Two Year Average	<u>\$ 739,050</u>		
17				
18	<u>Inflation Rate:</u>			
19	Future Test Year	2.125%		
20	Fully Projected Future Test Year	2.300%		
21				
22	<u>Reference Notes:</u>			
23	(a) Based upon two year average with Future Test Year inflation rate.			
24	(b) Based upon Future Test Year cost with Fully Projected Future Test Year inflation rate.			
25	(c) Customers are no longer charged a convenience fee for using a credit card to pay water bills,			
26	as an incentive to move customers to e-billing. The company will take on \$150,000			
27	in convenience fees in 2019.			
28	(d) Two year normalization of Company studies.			

Line No.	Description	12 Months Ended 12/31/2017	Future Test Year	Fully Projected Future Test Year
1	Outside Professional Services	\$ 64,321	\$ 66,660 (a)	\$ 68,193 (b)
2				
3	Total Outside Professional Services	<u>\$ 64,321</u>	<u>\$ 66,660</u>	<u>\$ 68,193</u>
4				
5	Adjustment		\$ 2,339	\$ 1,533
6				
7				
8				
9	<u>Year</u>	<u>Outside Professional Services Expense</u>		
10	2015	\$ 81,018		
11	2016	51,134		
12	2017	63,667		
13				
14	3 Year Average	\$ 65,273		
15				
16	Inflation Rate:			
17	Future Test Year	2.125%		
18	Fully Projected Future Test Year	2.300%		
19				
20	Reference Notes:			
21	(a) Based upon three year average with Future Test Year inflation rate.			
22	(b) Based upon Future Test Year cost with Fully Projected Future Test Year inflation rate.			

Line No.	Description	12 Months Ended 12/31/2017	Future Test Year	Fully Projected Future Test Year
1	Rent	\$ 60,330	\$ 60,476 (b)	\$ 60,476 (b)
2				
3	Total Rent	<u>\$ 60,330</u>	<u>\$ 60,476</u>	<u>\$ 60,476</u>
4				
5	Adjustment		\$ 146	\$ -
6				
7		Rent		
8	Year	Expense	Contract	
9	2017	\$ 120,952	2/1/17-1/31/18	
10	2018	\$ 120,952	2/1/18-1/31/19	
11	2019	\$ 120,952 (a)		

Reference Notes:

- (a) Company anticipates moving into a new building in January 2020.
Value accounts for the old building's monthly rent from 2/1/19 to 12/31/19.
(b) Company charges 50% of Office Rent expense to Capital.

Line No.	Description	12 Months Ended 12/31/2017	Future Test Year	Fully Projected Future Test Year
1	Office Equipment Rental	\$ 49,175	\$ 50,220	\$ 51,375
2				
3	Total Office Equipment Rental	<u>\$ 49,175</u>	<u>\$ 50,220</u>	<u>\$ 51,375</u>
4				
5	Adjustment		\$ 1,045	\$ 1,155
6				
7	<u>Inflation Rate:</u>			
8	Future Test Year	2.125%		
9	Fully Projected Future Test Year	2.300%		
10				
11	Reference Notes:			
12	(a) Based upon historic test year with Future Test Year inflation rate.			
13	(b) Based upon Future Test Year cost with Fully Projected Future Test Year inflation rate.			

Line No.	Description	12 Months Ended 12/31/2017	Future Test Year	Fully Projected Future Test Year	
1	Leases	\$ 304,463.58	\$ 285,266.20 (a)	\$ 377,583.48 (a)	
2	Car Allowance	\$ 15,799.92	\$ 10,757.11 (b)	\$ 11,004.53 (c)	
3	Fuel	\$ 138,997.73	\$ 102,938.89 (b)	\$ 105,306.48 (c)	
4	Maintenance & Repair	\$ 139,310.78	\$ 113,072.70 (b)	\$ 115,673.37 (c)	
5	Payroll				
6	Insurance	\$ 24,059.59	\$ 31,109.30 (b)	\$ 31,824.81 (c)	
7	Depreciation				
8	Disposal of Vehicle	\$ (3,500.00)	\$ (1,191.46) (b)	\$ (1,218.86) (c)	
9	Other	\$ 5,997.68	\$ 106,490.39 (b)	\$ 108,939.67 (c)	
10					
11	Total Costs	\$ 625,129.28	\$ 648,443.13	\$ 749,113.48	
12					
13	Less Cap and Billed Out	\$ (218,095.94)	\$ (184,546.52) (b)	\$ (188,791.09) (c)	
14					
15	Total Transportation Expense	\$ 407,033.34	\$ 463,896.62	\$ 560,322.40	
16					
17	Adjustment		\$ 56,863	\$ 96,426	
18					
19					
20	Description	2015	2016	2017	3 Year Average
21					
22	Car Allowance	\$ -	\$ 15,800	\$ 15,800	\$ 10,533
23	Fuel	\$ 42,744	\$ 120,649	\$ 138,998	\$ 100,797
24	Maintenance & Repair	\$ 44,547	\$ 148,302	\$ 139,311	\$ 110,720
25	Payroll				
26	Insurance	\$ 25,527	\$ 41,799	\$ 24,060	\$ 30,462
27	Depreciation				
28	Disposal of Vehicle	\$ -	\$ -	\$ (3,500)	\$ (1,167)
29	Other	\$ 302,486	\$ 4,340	\$ 5,998	\$ 104,275
30					
31	Less Cap and Billed Out	\$ (98,761)	\$ (225,263)	\$ (218,096)	\$ (180,707)
32					
33	Inflation Rate:				
34	Future Test Year	2.13%			
35	Fully Projected Future Test Year	2.30%			
36					
37	Reference:				
38	(a) Based on projected 2018 costs for Future Test Year and 2019 costs for Fully Projected Future Test Year.				
39	(b) Based upon three year average with Future Test Year inflation rate.				
40	(c) Based upon Future Test Year cost with Fully Projected Future Test Year inflation rate.				

Line No.	Description	12 Months Ended 12/31/2017	Future Test Year	Fully Projected Future Test Year
1	Property Insurance and General Corporate Liability Insurance	\$ 4,732	\$ 4,832 (a)	\$ 4,935 (b)
2				
3	Total	<u>\$ 4,732</u>	<u>\$ 4,832</u>	<u>\$ 4,935</u>
4				
5	Adjustment		\$ 101	\$ 103
6				
7	Inflation Rate:			
8	Future Test Year	2.13%		
9	Fully Projected Future Test Year	2.30%		

10

11 **Reference Notes:**

12 (a) Based upon historic test year average with Future Test Year inflation rate.

13 (b) Based upon Future Test Year cost with Fully Projected Future Test Year inflation rate.

Line No.	Description	12 Months Ended 12/31/2017	Future Test Year	Fully Projected Future Test Year
1	Worker Compensation	\$ 102,384	\$ 108,228 (a)	\$ 110,717 (b)
2				
3	Total Worker Compensation	<u>\$ 102,384</u>	<u>\$ 108,228</u>	<u>\$ 110,717</u>
4				
5	Adjustment		\$ 5,844	\$ 2,489

Inflation Rate:

Fully Projected Future Test Year 2.30%

Reference Notes:

(a) The estimate is referenced from MFR III-23 response for future test year.

(b) The FPFTY is based on the inflation rate.

Line No.	Description	12 Months Ended 12/31/2017	Future Test Year	Fully Projected Future Test Year
1	Advertising Expense	\$ 3,517	\$ 3,591.74 (a)	\$ 3,674 (b)
2				
3	Total Advertising Expense	<u>\$ 3,517</u>	<u>\$ 3,592</u>	<u>\$ 3,674</u>
4				
5	Adjustment		\$ 75	\$ 83
6				
7	<u>Inflation Rate:</u>			
8	Future Test Year	2.125%		
9	Fully Projected Future Test Year	2.300%		
10				
11	<u>Reference Notes:</u>			
12	(a) Based upon three year average with Future Test Year inflation rate.			
13	(b) Based upon Future Test Year cost with Fully Projected Future Test Year inflation rate.			

Line No.	Description	12 Months Ended 12/31/2017	Future Test Year	Fully Projected Future Test Year
1	Rate Case Expense Details:			
2	Legal Services			\$ 300,000
3	Customer Notifications, Transcripts & Misc.			15,000
4	Consulting Services:			
5	Rate of Return			30,000
6	Cost of Service			52,000
7	Depreciation Study/Revenue Requirement			170,000
8	Total Rate Case Expenses			<u>\$ 567,000</u>
9				
10	Current Amortization	<u>\$ 140,080</u>	<u>\$ 128,407</u>	
11	Amortize Rate Case Expenses Over 3 Years			<u>\$ 189,000</u>
12				
16	Total Regulatory Commission Expense	<u>\$ 140,080</u>	<u>\$ 128,407</u>	<u>\$ 189,000</u>
17				
18	Adjustment		\$ (11,674)	\$ 60,593

Line No.	Description	12 Months Ended 12/31/2017	Future Test Year	Fully Projected Future Test Year Under Present Rates 12/31/2019	Fully Projected Future Test Year Under Proposed Rates 12/31/2019
1	Regulatory Commission Expense:				
2	Regulatory Commission Expense	\$ 198,665	\$ 219,880	\$ 238,664	\$ 270,077
3					
4	Total Regulatory Commission Expense	<u>\$ 198,665</u>	<u>\$ 219,880</u>	<u>\$ 238,664</u>	<u>\$ 270,077</u>
5					
6	Adjustment		\$ 21,215	\$ 18,784	\$ 31,413
7					
8					
9					
10					
11		Per 2017			Fully Projected
12	Regulatory Commission Expense:	PAPUC	Future Test	Fully Projected	Future Test
13		Assesment	Year	Future Test Year	Year Under
14					Proposed Rates
15	Taxable Revenue	\$ 43,660,297	\$ 43,652,995	\$ 47,382,250	\$ 53,618,655
16	Amount Assessed	219,917	219,880	238,664	270,077
17					
18					

Line No.	Description	12 Months Ended 12/31/2017	Future Test Year	Fully Projected Future Test Year Under Present Rates 12/31/2019	Fully Projected Future Test Year Under Proposed Rates 12/31/2019
1	Bad Debt Expense	\$ 155,640	\$ 155,342	\$ 168,612	\$ 190,805
2					
3	Total Bad Debt Expense	\$ 155,640	\$ 155,342	\$ 168,612	\$ 190,805
4					
5	Adjustment		\$ (298)	\$ 13,271	\$ 22,193
6					
7					

	2017	2016	2015
Historic Uncollectable Expense	\$ 155,640	\$ 130,887	\$ 158,160
Historic Test Year Revenues	44,745,760	44,226,330	37,320,528
Effective Uncollectable Rate	0.348%	0.296%	0.424%
Average 3 Year Uncollectable Rate	0.356%		

	Future Test Year	Fully Projected Future Test Year Under Present Rates 12/31/2019	Fully Projected Future Test Year Under Proposed Rates 12/31/2019
Revenues	\$ 43,652,995	\$ 47,382,250	\$ 53,618,655
Uncollectable Expense	\$ 155,342	\$ 168,612	\$ 190,805

Line No.	GL A/C #	Categories	12 Months Ended 12/31/2017	Future Test Year	Fully Projected Future Test Year
1	70251	FICA Taxes	\$ 560,626 (a)	\$ 590,052	\$ 621,827
2	70252	Federal Unemployment Taxes		4,242	4,242
3	70253	State Unemployment Taxes		24,144	24,144
4	91460	Worker compensation	102,384	108,228	110,717
5	91500	Employee Pension Cost	1,425,022	1,409,589	1,442,010
6	91550	Post Retirement Health Care Accrued	(457,246)	(530,724)	(542,931)
7	91700	Employee Group Health & Life	1,323,689	1,407,156	1,439,521
8	91800	Employee 401K	201,925	\$ 245,526	\$ 252,344
9	91850	Other Employee Benefits	13,129	\$ 13,408	\$ 13,716
10	91860	Other Awards	2,837	2,898	2,964
11		Total Costs	\$ 3,172,367	\$ 3,274,519	\$ 3,368,554
12					
13		Account 90950/90953 (A/G)			
14					
15		Fringe Benefits Capitalized/Transferred Out/Other Accounts	\$ (1,059,720)	\$ (1,075,405)	\$ (1,106,288)
16					
17		Total Fringe Benefits Transferred	\$ (1,059,720)	\$ (1,075,405)	\$ (1,106,288)
18					
19					
20					
21		Net Transferred In/Out % (3 Yr Avg)	-32.84%		
22					
23		Inflation Rate:			
24		Future Test Year	2.125%		
25		Fully Projected Future Test Year	2.300%		
26					
27		Reference Notes:			
28		(a) Includes Federal and State Unemployment Taxes.			
29					

Line No.	Description	12 Months Ended 12/31/2017	Future Test Year	Fully Projected Future Test Year
1	Office Expense and Utilities	\$ 446,337	\$ 419,541 (a)	\$ 429,190 (b)
2				
3	PA - DEP Annual Fees			\$ 111,704 (c)
4				
5	Total Office Expense and Utilities	<u>\$ 446,337</u>	<u>\$ 419,541</u>	<u>\$ 540,894</u>
6				
7		Office Expense		
8	Year	and Utilities		
9	2015	\$ 445,512		
10	2016	340,584		
11	2017	446,337		
12				
13	3 Year Average	\$ 410,811		
14				
15	Inflation Rate:			
16	Future Test Year	2.125%		
17	Fully Projected Future Test Year	2.300%		
18				
19	Reference Notes:			
20	(a) Based upon three year average with Future Test Year inflation rate.			
21	(b) Based upon Future Test Year cost with Fully Projected Future Test Year inflation rate.			
	(c) The PA - DEP is changing its fee structure based on population in 2019. In 2017, the Company paid \$1,795.83 to the PA-DEP for the Act 109 Permit Fee. The estimate will increase \$111,704.17 in 2019 based on the Company's service area population and the DEP's new fee structure.			

Line No.	Description	12 Months Ended 12/31/2017	Future Test Year	Fully Projected Future Test Year
1	Postage and Air Freight	\$ 354,308	\$ 358,563 (a)	\$ 366,358 (b)
2				
3	Total Postage and Air Freight	<u>\$ 354,308</u>	<u>\$ 358,563</u>	<u>\$ 366,358</u>
4				
5	Adjustment		\$ 4,256	\$ 7,795
6				
7	Year	Services Expense		
8	2015	\$ 352,593		
9	2016	345,903		
10	2017	354,308		
11				
12	3 Year Average	\$ 350,934		
13				
14	Postage Rate:			
15	2017	\$ 0.46		
16	2018	0.47		
17	Percent Change	<u>2.17%</u>		
18				
19	Reference Notes:			
20	(a) Based upon three year average with the 2017 to 2018 postage rate percentage change.			
21	(b) Based upon Future Test Year cost with the 2017 to 2018 postage rate percentage change.			

Line No.	Description	12 Months Ended 12/31/2017	Future Test Year	Fully Projected Future Test Year
1	Other O&M	\$ 143,806	\$ 199,353	\$ 203,938
2				
3	Total Other O&M	\$ 143,806	\$ 199,353	\$ 203,938
4				
5	Adjustment		\$ 55,547	\$ 4,585
6				
7				
8				
9				
10	Year	Other O&M Expense		
11	2016	246,603		
12	2017	143,806		
13				
14	2 Year Average	\$ 195,204		
15				
16	Inflation Rate:			
17	Future Test Year		2.13%	
18	Fully Projected Future Test Year		2.30%	
19				
20	Reference Notes:			
21	(a) Based upon two year average with Future Test Year inflation rate.			
22	(b) Based upon Future Test Year cost with Fully Projected Future Test Year inflation rate.			

Suez Water Pennsylvania
Docket No. R-2018-3000834
Mahoning Acquisition Adjustments
Various Accounts

Exhibit No. CEH-2
Schedule-29
Adjustment No. 28
Page 1 of 1

Line No.	Description	12 Months Ended 12/31/2017	Future Test Year	Fully Projected Future Test Year
1	Purchased Water			\$ 360,835
2				
3	Energy/Power			24,948
4				
5	Additional Subcontractor			45,000
6				
7	Total Mahoning Twp Acquisition Adjustments			\$ 430,783

Line No.	Description			
1	Source: Blue Chip Financial Forecasts March 1, 2018			
2				
3	Consumer Price Index			
4				
5	Future Test Year:			
6		Annual		Quarter
7	1Q2018		3.10%	0.78%
8	2Q2018		-0.30%	-0.08%
9	3Q2018		2.00%	0.50%
10	4Q2018		3.70%	0.93%
11				
12	Inflation Adjustment:			<u>2.13%</u>
13				
14	Fully Projected Future Test Year:			
15		Annual		Quarter
16	1Q2019		2.30%	0.58%
17	2Q2019		2.30%	0.58%
18	3Q2019		2.30% (a)	0.58%
19	4Q2019		2.30% (a)	0.58%
20				
21	Inflation Adjustment:			<u>2.30%</u>
22				
23	Reference Notes:			
24	(a) Index not available, used 2Q of 2019 index.			

Line No.	Description	12 Months Ended 12/31/2017	Future Test Year	Fully Projected Future Test Year
1	Real Estate Taxes	\$ 270,553	\$ 311,025 (a)	\$ 318,178 (b)
2				
3	Total Real Estate Taxes	<u>\$ 270,553</u>	<u>\$ 311,025</u>	<u>\$ 318,178</u>
4				
5	Adjustment		\$ 40,472	\$ 7,154

Description	12 Months Ended 12/31/2017	Future Test Year	Fully Projected Future Test Year
PURTA	\$ 245,256	\$ 250,468	\$ 256,228
Less Refund	(34,000)	-	-
Property Tax	59,297	60,557	61,950
Total	\$ 270,553	\$ 311,025	\$ 318,178

Inflation Rate:

Future Test Year	2.13%
Fully Projected Future Test Year	2.30%

Reference Notes:

(a) Based upon historic test year (less refund), with Future Test Year inflation rate.

(b) Based upon Future Test Year cost with Fully Projected Future Test Year inflation rate.

Historical:

	<u>12-Months Ending 12/31/2017</u>	<u>Future Test Year</u>	<u>Fully Projected Future Test Year</u>
Total Water	\$ 560,626	618,438	650,213
Adjustment		\$ 57,812	\$ 31,775

Future Test Year

	<u>FICA</u>	<u>Medicare</u>	<u>FUI</u>	<u>SUI</u>	<u>Total</u>
Total Water	476,682	113,370	4,242	24,144	\$ 618,438
FTY Tax Rates	<u>FICA</u>	<u>Medicare</u>	<u>FUI</u>	<u>SUI</u>	
2018	6.20%	1.45%	0.600%	2.3905%	

Fully Projected Future Test Year

	<u>FICA</u>	<u>Medicare</u>	<u>FUI</u>	<u>SUI</u>	<u>Total</u>
Total Water	503,964	117,863	4,242	24,144	\$ 650,213
FPFTY Tax Rates	<u>FICA</u>	<u>Medicare</u>	<u>FUI</u>	<u>SUI</u>	
2018	6.20%	1.45%	0.600%	2.3905%	

Reference Notes:

(a) See workpaper CEH-2.2

Historical:

	12-Months Ending 12/31/2017	Future Test Year	Fully Projected Future Test Year
Total Water	\$ 7,361,991	9,115,697	9,673,871
Depreciation on CIAC/Advances	(950,910)	(950,910)	(950,910)
	<u>\$ 7,361,991</u>	<u>\$ 8,164,788</u>	<u>\$ 8,722,962</u>
Adjustment		\$ 802,796	\$ 558,174
Adjustment Reg Liability due to TCJA		\$ (265,198)	\$ (265,198)

Reference Notes:

(a) See Exhibits No. JJS-2, and JJS-3

Line No	Description	Dec-17 Federal Income Tax Current Rates	Dec-17 State Income Tax Current Rates	Dec-18 Federal Income Tax Current Rates	Dec-18 State Income Tax Current Rates	Dec-18 Total Income Taxes	Dec-19 Federal Income Tax Current Rates	Dec-19 State Income Tax Current Rates	Dec-19 Total Income Taxes	Dec-19 Federal Income Tax Proposed Rates	Dec-19 State Income Tax Proposed Rates	Dec-19 Total Income Taxes Proposed Rates
1	Operating Income Before Income Taxes	\$ 20,648,526	\$ 20,648,526	\$ 16,897,453	\$ 16,897,453		\$ 18,692,663	\$ 18,692,663		\$ 24,875,462	\$ 24,875,462	
2	Interest Expense (1)	4,485,685	4,485,685	4,454,044	4,485,685		5,186,994	5,186,994		5,186,994	5,186,994	
3	State Income Tax	1,289,182		1,096,254			1,086,677			1,704,339		
4	Repair Adjustment on 2018 Additions			1,467,857	1,467,857							
5	Repair Adjustment on 2019 Additions						2,222,921	2,222,921		2,222,921	2,222,921	
9	Excess Of Tax Depreciation Over Book	3,042,455	3,258,114	71,872	282,414		506,570	717,113		506,570	717,113	
10	Taxable Income	<u>\$ 11,831,205</u>	<u>\$ 12,904,728</u>	<u>\$ 9,807,427</u>	<u>\$ 10,661,497</u>		<u>\$ 9,689,500</u>	<u>\$ 10,565,634</u>		<u>\$ 15,254,638</u>	<u>\$ 16,748,434</u>	
11	Income Tax Rate	35.00%	9.99%	21.00%	9.99%		21.00%	9.99%		21.00%	9.99%	
12	Pro Forma Income Tax Current	4,140,922	1,289,182	2,059,560	1,065,084		2,034,795	1,055,507		3,203,474	1,673,169	
13	CTA Adjustment											
14	Amortization of Flow through Taxes			38,123	31,170		38,123	31,170		38,123	31,170	
15	Amortization of Income Tax Credit						-			-		
16	Total - Current Income Taxes	<u>\$ 4,140,922</u>	<u>\$ 1,289,182</u>	<u>\$ 2,097,682</u>	<u>\$ 1,096,254</u>		<u>\$ 2,072,918</u>	<u>\$ 1,086,677</u>		<u>\$ 3,241,596</u>	<u>\$ 1,704,339</u>	
	<u>Deferred Income Tax</u>											
17	Repair Adjustment			\$ 1,467,857			2,222,921			2,222,921		
18	Less State Deduction (Fr Sch 6-6)											
19	Income Tax Rate			21.00%			21.00%			21.00%		
20	Deferred Income Tax - Repair Adjustment			308,250			466,813			466,813		
21	Excess Of Tax Depreciation Over Book			\$ 71,872			\$ 506,570			\$ 506,570	\$ -	
22	Less State Deferred Income Tax			-			-			-		
23	Income Tax Rate			21.00%	9.99%		21.00%	9.99%		21.00%	9.99%	
24	Deferred Income Tax - Tax/Book Deprec.			15,093			106,380			106,380		
25	Total Deferred Income Tax (L20+L24)			323,343			573,193			573,193		
26	Total Income Taxes (L16+L25)	<u>\$ 4,140,922</u>	<u>\$ 1,289,182</u>	<u>\$ 2,421,025</u>	<u>\$ 1,096,254</u>	<u>\$ 3,517,279</u>	<u>\$ 2,646,111</u>	<u>\$ 1,086,677</u>	<u>\$ 3,732,788</u>	<u>\$ 3,814,790</u>	<u>\$ 1,704,339</u>	<u>\$ 5,519,128</u>
	<u>Adjustment</u>											
27	Rate Base	\$ 190,763,193	\$ 190,763,193	\$ 209,048,221	\$ 209,048,221		\$ 243,448,860	\$ 243,448,860		\$ 243,448,860	\$ 243,448,860	
28	Weighted Cost Of Debt	2.13%	2.13%	2.13%	2.13%		2.13%	2.13%		2.13%	2.13%	
29	Interest Expense (1)	<u>\$ 4,064,458</u>	<u>\$ 4,064,458</u>	<u>\$ 4,454,044</u>	<u>\$ 4,454,044</u>		<u>\$ 5,186,994</u>	<u>\$ 5,186,994</u>		<u>\$ 5,186,994</u>	<u>\$ 5,186,994</u>	

SUEZ WATER PENNSYLVANIA
EMPLOYEE PAYROLL FOR FUTURE TEST YEAR ENDED DECEMBER 31, 2018

	Calendar Year 12/31/2015	Calendar Year 12/31/2016	Calendar Year 12/31/2017	Future Test Year 3 Yr. Avg.
Overtime Expense				
Overtime (\$)	\$ 417,672	\$ 398,920	\$ 352,627	\$ 389,739
Department:				
Administration - General	13,367	9,185	5,023	9,192
Capital Management	4,878	4,158	3,696	4,244
Customer Service Field	4,503	13,053	1,925	6,494
Customer Service Office	34,285	49,301	51,379	44,988
Financial Planning	6,038	3,544	3,458	4,347
Maintenance	21,781	24,031	22,535	22,782
Meter Field	14,786	21,579	8,962	15,109
Meter Reading	7,692	-	-	2,564
Production	91,607	110,963	92,289	98,286
System Maint Distribution	218,735	163,105	163,360	181,733
Overtime (\$)	9,701	9,298	7,897	8,965
Department:				
Administration - General	293.00	195.00	103.50	197.17
Capital Management	131.00	115.50	101.00	115.83
Customer Service Field	132.50	339.50	56.00	176.00
Customer Service Office	1,022.00	1,576.70	1,522.75	1,373.82
Financial Planning	169.25	96.75	91.50	119.17
Maintenance	468.00	499.00	448.00	471.67
Meter Field	400.00	543.50	220.00	387.83
Meter Reading	204.50	-	-	68.17
Production	1,997.00	2,332.00	1,893.50	2,074.17
System Maint Distribution	4,883.25	3,599.75	3,461.00	3,981.33
3 Year Avg Overtime Hourly Rate (Historical - 2015,2016,2017)				\$ 43.47
FTY Overtime Hourly Rate @ 3% Increase to Historical Overtime Rate				\$ 44.78
FTY Overtime \$ By Department				\$ 401,432
Department:				
Administration - General				8,829
Capital Management				5,187
Customer Service Field				7,881
Customer Service Office				61,515
Financial Planning				5,336
Maintenance				21,120
Meter Field				17,366
Meter Reading				3,052
Production				92,875
System Maint Distribution				178,272

SUEZ WATER PENNSYLVANIA
EMPLOYEE PAYROLL FOR FUTURE TEST YEAR ENDED DECEMBER 31, 2018

	Calendar Year 12/31/2015	Calendar Year 12/31/2016	Calendar Year 12/31/2017	Future Test Year 3 Yr. Avg.
Standby Expense				
Standby (\$)	\$ 65,700	\$ 68,874	\$ 87,933	\$ 74,169
Department:				
Customer Service Field	677	5,093	-	1,923
Meter Field	2,054	2,948	752	1,918
Meter Reading	3,029	-	-	1,010
Production	4,782	3,958	19,638	9,459
System Maint Distribution	55,158	56,875	67,543	59,859
Standby (Hours)	2,450	2,502	3,007	2,653
Department:				
Customer Service Field	27.50	206.50	-	78.00
Meter Field	83.50	113.50	28.00	75.00
Meter Reading	122.00	-	-	40.67
Production	184.50	147.00	649.00	326.83
System Maint Distribution	2,032.00	2,035.00	2,329.50	2,132.17
3 Year Avg Standby Hourly Rate (Historical - 2015,2016,2017)				\$ 27.96
FTY Standby Hourly Rate @ 3% Increase to Historical Standby Rate				\$ 28.80
FTY Standby \$ By Department				\$ 76,394
Department:				
Customer Service Field				2,246
Meter Field				2,160
Meter Reading				1,171
Production				9,412
System Maint Distribution				61,404

	Calendar Year 12/31/2015	Calendar Year 12/31/2016	Calendar Year 12/31/2017	Future Test Year 3 Yr. Avg.
Shift Expense				
Shift (\$)	\$ 24,459	\$ 19,640	\$ 254	\$ 14,784
Department:				
Maintenance	71	100	254	142
Meter Reading	414	-	-	138
Production	18,516	17,946	-	12,154
System Maint Distribution	5,458	1,593	-	2,350
FTY Shift Hourly Rate @ 3% Increase to Historical Shift Rate				\$ 15,228
FTY Shift \$ By Department				
Department:				
Maintenance				146
Meter Reading				142
Production				12,519
System Maint Distribution				2,421

SUEZ WATER PENNSYLVANIA
EMPLOYEE PAYROLL FOR FUTURE TEST YEAR ENDED DECEMBER 31, 2018

	Calendar Year 12/31/2015	Calendar Year 12/31/2016	Calendar Year 12/31/2017	Future Test Year 3 Yr. Avg.
Substitution Expense				
Substitution (\$)	\$ 5,613	\$ 3,511	\$ 4,290	\$ 4,471
Department:				
Customer Service Field	173	-	-	58
Meter Field	2,299	1,763	-	1,354
System Maint Distribution	3,141	1,748	4,290	3,060
Substitution (Hours)	116	69	84	90
Department:				
Customer Service Field	4.00	-	-	1.33
Meter Field	48.50	33.00	-	27.17
System Maint Distribution	63.50	36.00	84.00	61.17
3 Year Avg Overtime Hourly Rate (Historical - 2015,2016,2017)				\$ 49.86
FTY Substitution Hourly Rate @ 3% Increase to Historical Substitution Rate				\$ 51.36
FTY Substitution \$ By Department				\$ 4,605
Department:				
Customer Service Field				\$ 68
Meter Field				\$ 1,395
System Maint Distribution				\$ 3,142

SUEZ WATER PENNSYLVANIA
EMPLOYEE PAYROLL FOR FULLY PROJECTED FUTURE TEST YEAR ENDED DECEMBER 31, 2019

	Calendar Year 12/31/2015	Calendar Year 12/31/2016	Calendar Year 12/31/2017	Future Test Year 3 Yr. Avg.	Fully Projected Future Test Year 3 Yr. Avg.
Overtime Expense					
Overtime (\$)	\$ 417,672	\$ 398,920	\$ 352,627	\$ 389,739	
Department:					
Administration - General	13,367	9,185	5,023	9,192	
Capital Management	4,878	4,158	3,696	4,244	
Customer Service Field	4,503	13,053	1,925	6,494	
Customer Service Office	34,285	49,301	51,379	44,988	
Financial Planning	6,038	3,544	3,458	4,347	
Maintenance	21,781	24,031	22,535	22,782	
Meter Field	14,786	21,579	8,962	15,109	
Meter Reading	7,692	-	-	2,564	
Production	91,607	110,963	92,289	98,286	
System Maint Distribution	218,735	163,105	163,360	181,733	
Overtime (Hours)	9,701	9,298	7,897	8,965	8,965
Department:					
Administration - General	293.00	195.00	103.50	197.17	197.17
Capital Management	131.00	115.50	101.00	115.83	115.83
Customer Service Field	132.50	339.50	56.00	176.00	176.00
Customer Service Office	1,022.00	1,576.70	1,522.75	1,373.82	1,373.82
Financial Planning	169.25	96.75	91.50	119.17	119.17
Maintenance	468.00	499.00	448.00	471.67	471.67
Meter Field	400.00	543.50	220.00	387.83	387.83
Meter Reading	204.50	-	-	68.17	68.17
Production	1,997.00	2,332.00	1,893.50	2,074.17	2,074.17
System Maint Distribution	4,883.25	3,599.75	3,461.00	3,981.33	3,981.33
				FTY	FPPTY
3 Year Avg Overtime Hourly Rate (Historical - 2015,2016,2017)				\$ 43.47	
FPPTY Overtime Hourly Rate @ 3% Increase to FTY Overtime Rate				\$ 44.78	\$ 46.12
FPPTY Overtime \$ By Department				\$ 401,432	\$ 413,475
Department:					
Administration - General				\$ 8,829	\$ 9,093
Capital Management				\$ 5,187	\$ 5,342
Customer Service Field				\$ 7,881	\$ 8,117
Customer Service Office				\$ 61,515	\$ 63,361
Financial Planning				\$ 5,336	\$ 5,496
Maintenance				\$ 21,120	\$ 21,753
Meter Field				\$ 17,366	\$ 17,887
Meter Reading				\$ 3,052	\$ 3,144
Production				\$ 92,875	\$ 95,661
System Maint Distribution				\$ 178,272	\$ 183,620

SUEZ WATER PENNSYLVANIA
EMPLOYEE PAYROLL FOR FULLY PROJECTED FUTURE TEST YEAR ENDED DECEMBER 31, 2019

	Calendar Year 12/31/2015	Calendar Year 12/31/2016	Calendar Year 12/31/2017	Future Test Year 3 Yr. Avg.	Fully Projected Future Test Year 3 Yr. Avg.
Standby Expense					
Standby (\$)	\$ 65,700	\$ 68,874	\$ 87,933	\$ 74,169	
Department					
Customer Service Field	677	5,093	-	1,923	
Meter Field	2,054	2,948	752	1,918	
Meter Reading	3,029	-	-	1,010	
Production	4,782	3,958	19,638	9,459	
System Maint Distribution	55,158	56,875	67,543	59,859	
Standby (Hours)	2,450	2,502	3,007	2,653	2,653
Department:					
Customer Service Field	27.50	206.50	-	78.00	78.00
Meter Field	83.50	113.50	28.00	75.00	75.00
Meter Reading	122.00	-	-	40.67	40.67
Production	184.50	147.00	649.00	326.83	326.83
System Maint Distribution	2,032.00	2,035.00	2,329.50	2,132.17	2,132.17
				FTY	FPFTY
3 Year Avg Standby Pay (Historical - 2015,2016,2017)				\$ 27.96	
FPFTY Standby Hourly Pay @ 3% Increase to FTY Standby Pay				\$ 28.80	\$ 29.66
FPFTY Standby \$ By Department				\$ 76,394	\$ 78,686
Department:					
Customer Service Field				2,246	2,314
Meter Field				2,160	2,225
Meter Reading				1,171	1,206
Production				9,412	9,695
System Maint Distribution				61,404	63,246

	Calendar Year 12/31/2015	Calendar Year 12/31/2016	Calendar Year 12/31/2017	Future Test Year 3 Yr. Avg.	Fully Projected Future Test Year 3 Yr. Avg.
Shift Expense					
Shift (\$)	\$ 24,459	\$ 19,640	\$ 254	\$ 14,784	\$ 14,784
Department:					
Maintenance	71	100	254	142	142
Meter Reading	414	-	-	138	138
Production	18,516	17,946	-	12,154	12,154
System Maint Distribution	5,458	1,593	-	2,350	2,350
				FTY	FPFTY
FPFTY Overtime Hourly Rate @ 3% Increase to FTY Shift Pay				\$ 15,228	\$ 15,685
FPFTY Standby \$ By Department					
Department:					
Maintenance				146	150
Meter Reading				142	146
Production				12,519	12,894
System Maint Distribution				2,421	2,494

SUEZ WATER PENNSYLVANIA
EMPLOYEE PAYROLL FOR FULLY PROJECTED FUTURE TEST YEAR ENDED DECEMBER 31, 2019

	Calendar Year 12/31/2015	Calendar Year 12/31/2016	Calendar Year 12/31/2017	Future Test Year 3 Yr. Avg.	Fully Projected Future Test Year 3 Yr. Avg.
Substitution Expense					
Substitution (\$)	\$ 5,613	\$ 3,511	\$ 4,290	\$ 4,471	
Department:					
Customer Service Field	173	-	-	58	
Meter Field	2,299	1,763	-	1,354	
System Maint Distribution	3,141	1,748	4,290	3,060	
Substitution (Hours)	116	69	84	90	90
Department:					
Customer Service Field	4.00	-	-	1.33	1.33
Meter Field	48.50	33.00	-	27.17	27.17
System Maint Distribution	63.50	36.00	84.00	61.17	61.17
				FTY	FPFTY
3 Year Avg Overtime Hourly Rate (Historical - 2015,2016,2017)				\$ 49.86	
FTY Overtime Hourly Rate @ 3% Increase to Historical Overtime Rate				\$ 51.36	\$ 52.90
FTY Overtime \$ By Department				\$ 4,605	\$ 4,743
Department:					
Customer Service Field				68	71
Meter Field				1,395	1,437
System Maint Distribution				3,142	3,236

SUEZ WATER PENNSYLVANIA
 LABOR EXPENSE FOR FUTURE TEST YEAR ENDED DECEMBER 31, 2018 - CALCULATION OF PAYROLL TAX

Line #	Employee ID #	Job Title	Office Location	Bargaining Exempt/Non-Exempt	Department	2018 FTY Salary Total	FTY FICA	FTY Medicare	FUI	SUI
							6.200%	1.450%	0.600%	2.3905%
							\$	\$	\$	\$
1	0000001005	Field Service Representative	PA Harnsburg	Bargaining	Customer Service Field/Meter	63,136	3,914	915	42	239
2	00001177634	Field Service Representative	PA Harnsburg	Bargaining	Customer Service Field/Meter	56,806	3,522	824	42	239
3	00001178403	Field Service Representative	PA Harnsburg	Bargaining	Customer Service Field/Meter	50,499	3,131	732	42	239
4	00001176599	Field Service Representative	PA Harnsburg	Bargaining	Customer Service Field/Meter	63,136	3,914	915	42	239
5	00001175239	Customer Serv Rep Office-Harr	PA Harnsburg	Bargaining	Customer Service Office	59,302	3,677	860	42	239
6	00001178480	Customer Serv Rep Office-Harr	PA Harnsburg	Bargaining	Customer Service Office	47,437	2,941	688	42	239
7	00001176579	Customer Serv Rep Office-Harr	PA Harnsburg	Bargaining	Customer Service Office	59,302	3,677	860	42	239
8	00001177762	Customer Serv Rep Office-Harr	PA Harnsburg	Bargaining	Customer Service Office	59,302	3,677	860	42	239
9	00001178715	Customer Serv Rep Office-Harr	PA Harnsburg	Bargaining	Customer Service Office	47,437	2,941	688	42	239
10	00001173185	Customer Serv Rep Office-Harr	PA Harnsburg	Bargaining	Customer Service Office	59,302	3,677	860	42	239
11	00001177669	Customer Serv Rep Office-Harr	PA Harnsburg	Bargaining	Customer Service Office	59,302	3,677	860	42	239
12	00001175987	Customer Serv Rep Office-Harr	PA Harnsburg	Bargaining	Customer Service Office	59,302	3,677	860	42	239
13	00000003025	Customer Serv Rep Office-Harr	PA Harnsburg	Bargaining	Customer Service Office	59,302	3,677	860	42	239
14	00000000917	Maintenance Technician	PA Harnsburg	Bargaining	Maintenance	75,934	4,708	1,101	42	239
15	00000000915	Maintenance Technician	PA Harnsburg	Bargaining	Maintenance	75,934	4,708	1,101	42	239
16	00000001239	Maintenance Technician	PA Harnsburg	Bargaining	Maintenance	75,934	4,708	1,101	42	239
17	00001170134	Electrician	PA Harnsburg	Bargaining	Maintenance	79,420	4,912	1,149	42	239
18	00000001028	Maintenance Technician	PA Harnsburg	Bargaining	Production	78,153	4,845	1,133	42	239
19	00001177000	Relief Operator-Harnsburg	PA Harnsburg	Bargaining	Production	73,835	4,578	1,071	42	239
20	00001172981	Relief Operator-Harnsburg	PA Harnsburg	Bargaining	Production	77,337	4,795	1,121	42	239
21	00000009839	Plant Operator-Harnsburg	PA Harnsburg	Bargaining	Production	76,234	4,726	1,105	42	239
22	00000001027	Plant Operator-Bloomsburg	PA Bloomsburg	Bargaining	Production	71,556	4,436	1,048	42	239
23	00001172607	Plant Operator-Harnsburg	PA Harnsburg	Bargaining	Production	76,234	4,726	1,105	42	239
24	00001173622	Plant Operator-Bloomsburg	PA Bloomsburg	Bargaining	Production	73,955	4,585	1,072	42	239
25	00001173364	Plant Operator-Bloomsburg	PA Bloomsburg	Bargaining	Production	73,955	4,585	1,072	42	239
26	00000000941	Plant Operator-Harnsburg	PA Harnsburg	Bargaining	Production	76,234	4,726	1,105	42	239
27	00001174942	Plant Operator-Bloomsburg	PA Bloomsburg	Bargaining	Production	73,955	4,585	1,072	42	239
28	00000001233	Plant Operator-Harnsburg	PA Harnsburg	Bargaining	Production	76,234	4,726	1,105	42	239
29	00001172936	Plant Operator-Harnsburg	PA Harnsburg	Bargaining	Production	76,234	4,726	1,105	42	239
30	00000000925	Plant Operator-Harnsburg	PA Harnsburg	Bargaining	Production	76,234	4,726	1,105	42	239
31	00000002925	Crew Chief-Bloomsburg	PA Bloomsburg	Bargaining	System Maint Distribution	76,024	4,714	1,102	42	239
32	00000001029	Utility A Person -Bloomsburg	PA Bloomsburg	Bargaining	System Maint Distribution	72,860	4,517	1,056	42	239
33	00001172842	Utility A Person -Bloomsburg	PA Bloomsburg	Bargaining	System Maint Distribution	72,860	4,517	1,056	42	239
34	00000001035	Utility B Person -Bloomsburg	PA Bloomsburg	Bargaining	System Maint Distribution	64,058	3,972	929	42	239
35	00000000872	Equipment Operator-Harnsburg	PA Harnsburg	Bargaining	System Maint Distribution	82,823	5,135	1,201	42	239
36	00001170305	Utility Worker-Harnsburg	PA Harnsburg	Bargaining	System Maint Distribution	74,022	4,589	1,073	42	239
37	00000001073	Utility Worker-Harnsburg	PA Harnsburg	Bargaining	System Maint Distribution	74,022	4,589	1,073	42	239
38	00001172732	Utility Worker-Harnsburg	PA Harnsburg	Bargaining	System Maint Distribution	74,022	4,589	1,073	42	239
39	00001170352	Utility Worker-Harnsburg	PA Harnsburg	Bargaining	System Maint Distribution	74,022	4,589	1,073	42	239
40	00000000499	Equipment Operator-Harnsburg	PA Harnsburg	Bargaining	System Maint Distribution	82,823	5,135	1,201	42	239
41	00001172001	Utility Worker-Harnsburg	PA Harnsburg	Bargaining	System Maint Distribution	74,022	4,589	1,073	42	239
42	00001176622	Utility Worker-Harnsburg	PA Harnsburg	Bargaining	System Maint Distribution	74,022	4,589	1,073	42	239
43	00001172012	Utility Worker-Harnsburg	PA Harnsburg	Bargaining	System Maint Distribution	74,022	4,589	1,073	42	239
44	00000001015	Leader-Harnsburg	PA Harnsburg	Bargaining	System Maint Distribution	85,642	5,310	1,242	42	239
45	00000001164	Leader-Harnsburg	PA Harnsburg	Bargaining	System Maint Distribution	85,642	5,310	1,242	42	239
46	00000000980	Field Service Representative	PA Harnsburg	Bargaining	System Maint Distributor/Meter	71,097	4,408	1,031	42	239
47	00001172754	Utility Worker-Harnsburg	PA Harnsburg	Bargaining	System Maint Distribution	74,022	4,589	1,073	42	239
48	00001176303	Utility Worker-Harnsburg	PA Harnsburg	Bargaining	System Maint Distribution	74,022	4,589	1,073	42	239
49	00000000924	Utility Worker-Harnsburg	PA Harnsburg	Bargaining	System Maint Distribution	74,022	4,589	1,073	42	239
50	00000001467	Leader-Harnsburg	PA Harnsburg	Bargaining	System Maint Distribution	85,642	5,310	1,242	42	239
51		Subtotal				3,550,421	220,126	51,481	2,100	11,953
52										
53		Vacancies	None							
54		Subtotal								
55										
56		Projected New Hires								
57	start 1/1/2019	Utility B Person	PA Bloomsburg	Bargaining	System Maint Distribution	59,329	3,678	860	42	239
58	start 1/1/2019	Electrician/SCADA	PA Bloomsburg	Bargaining	Maintenance	68,332	4,237	991	42	239
59		Subtotal				127,661	7,915	1,851	84	478
60										
61		Total Bargaining				3,678,082	228,041	53,332	2,184	12,431

SUEZ WATER PENNSYLVANIA
 LABOR EXPENSE FOR FUTURE TEST YEAR ENDED DECEMBER 31, 2018 - CALCULATION OF PAYROLL TAX

Line #	Employee ID #	Job Title	Office Location	Bargaining Exempt/Non-Exempt	Department	Total	FTY FICA	FTY Medicare	FUI	SUI
61	Non-Exempt						6 200%	1 450%	0 600%	2 3905%
62	0000000986	Supernitendent	PA Bloomsburg	Exempt	Administration - General	\$ 98,997	\$ 6,138	\$ 1,435	\$ 42	\$ 239
63	00001178714	Manager Water Quality	PA Harrisburg	Exempt	Administration - General	103,644	6,426	1,503	42	239
64	00001178983	NRW Specialist	PA Harrisburg	Exempt	Administration - General	58,705	3,640	851	42	239
65	00001173794	Water Quality Specialist	PA Harrisburg	Exempt	Administration - General	71,370	4,425	1,035	42	239
66	00001177800	Data & Asset Mgmt Specialist	PA Harrisburg	Exempt	Administration - General	72,196	4,476	1,047	42	239
67	0000000966	General Manager	PA Harrisburg	Exempt	Administration - General	290,208	7,979	2,900	42	239
68	00001175835	Director Operations	PA Harrisburg	Exempt	Administration - General	174,376	7,979	2,524	42	239
69	00001173315	Administrative Coordinator	PA Harrisburg	Exempt	Administration - General	74,180	4,599	1,076	42	239
70	00001173428	Senior Engineer	PA Harrisburg	Exempt	Administration - General	127,052	7,877	1,842	42	239
71	00001177671	Manager Env Health & Safety	PA Harrisburg	Exempt	Administration - General	108,060	6,700	1,567	42	239
72	00001173659	Water Quality Specialist	PA Dallas	Exempt	Administration - General	74,941	4,646	1,087	42	239
73	00001172860	Public Affairs Mgr	PA Harrisburg	Exempt	Communications	116,702	7,236	1,692	42	239
74	00001178243	Supervisor Customer Service	PA Harrisburg	Exempt	Customer Service Office	81,113	5,029	1,176	42	239
75	00001176511	Manager Customer Service	PA Harrisburg	Exempt	Customer Service Office	119,890	7,433	1,738	42	239
76	00001176098	GIS Lead	PA Harrisburg	Exempt	Engineering	63,378	3,929	919	42	239
77	00001178264	Project Manager Engineering	PA Harrisburg	Exempt	Engineering	81,113	5,029	1,176	42	239
78	00001170362	Manager Engineering	PA Harrisburg	Exempt	Engineering	127,479	7,904	1,848	42	239
79	00001178568	Engineer	PA Harrisburg	Exempt	Engineering	72,460	4,493	1,051	42	239
80	00001178748	Construction Coordinator	PA Harrisburg	Exempt	Engineering	78,958	4,895	1,145	42	239
81	00001178494	Financial Analyst	PA Harrisburg	Exempt	Financial Planning	68,135	4,224	988	42	239
82	00001178271	Data Analyst	PA Harrisburg	Exempt	Financial Planning	54,075	3,353	784	42	239
83	00001173787	Director Finance	PA Harrisburg	Exempt	Financial Planning	141,948	7,979	2,056	42	239
84	00001174828	Assistant Manager Operations	PA Harrisburg	Exempt	Production	92,702	5,717	1,337	42	239
85	00001175056	Supernitendent Production	PA Harrisburg	Exempt	Production	104,303	6,467	1,512	42	239
86	00001173102	Automated System Spec	PA Harrisburg	Exempt	Production	96,917	6,009	1,405	42	239
87	00001176485	Assistant Supervisor Prod/T&D	PA Bloomsburg	Exempt	Production	74,263	4,604	1,077	42	239
88	0000000197	Supernitendent Production	PA Bloomsburg	Exempt	Production	81,711	5,066	1,185	42	239
89	00001176419	Supernitendent T&D	PA Harrisburg	Exempt	System Maint Distribution	98,411	6,102	1,427	42	239
90	0000000933	Non-Revenue Water Technician	PA Harrisburg	Non-exempt	Administration - General	81,141	5,031	1,177	42	239
91	00001175940	Admin Asst	PA Harrisburg	Non-exempt	Engineering	59,471	3,687	862	42	239
92	00001173427	Accounting Rep	PA Harrisburg	Non-exempt	Financial Planning	61,407	3,807	890	42	239
93	0000000967	Lead Operator	PA Mechanicsburg	Non-exempt	Production	85,199	5,282	1,235	42	239
94	00001172494	Office Asst (Part Time)	PA Harrisburg	Non-exempt	Production	46,498	2,883	674	42	239
95	0000000955	Operator	PA Mechanicsburg	Non-exempt	Production	76,479	4,742	1,109	42	239
96	0000000973	Operator	PA Mechanicsburg	Non-exempt	Production	76,479	4,742	1,109	42	239
97	00001173628	Utility Person	PA Mechanicsburg	Non-exempt	System Maint Distribution	53,772	3,334	780	42	239
98	00001176343	Utility Person	PA Mechanicsburg	Non-exempt	System Maint Distribution	70,720	4,385	1,025	42	239
99	00001175781	Utility Person	PA Mechanicsburg	Non-exempt	System Maint Distribution	70,720	4,385	1,025	42	239
100	00001175433	Utility Person	PA Mechanicsburg	Non-exempt	System Maint Distribution	70,720	4,385	1,025	42	239
101	0000000931	Utility Person	PA Mechanicsburg	Non-exempt	System Maint Distribution	70,720	4,385	1,025	42	239
102	00001172493	Office Asst	PA Harrisburg	Non-exempt	System Maint Distribution	50,987	3,161	739	42	239
103	00001174804	Foreperson	PA Harrisburg	Non-exempt	System Maint Distribution	82,290	5,102	1,193	42	239
104	00001175450	Field Services Tech	PA Dallas	Non-exempt	System Maint Distribution/Meter	61,142	3,791	887	42	239
105	00001172919	Field Services Tech	PA Dallas	Non-exempt	System Maint Distribution/Meter	68,249	4,231	990	42	239
106	00001178112	Field Services Tech	PA Dallas	Non-exempt	System Maint Distribution/Meter	60,591	3,757	879	42	239
107	00000001014	Foreperson	PA Dallas	Non-exempt	System Maint Distribution	83,586	5,182	1,212	42	239
108		Subtotal				4,036,957	236,625	57,228	1,932	10,996
109										
110	Vacancies	None								
111		Subtotal								
112										
113	Projected New Hires									
114	start 1/1/2019	Admin Assistant Bloom (Part Time)	PA Bloomsburg	Non-exempt	Admn Gen	26,428	1,639	383	42	239
115	start 1/1/2019	Supervisor T&D	PA Harrisburg	Exempt	SystMaintConst	86,397	5,357	1,253	42	239
116	start 1/1/2019	Supervisor Prod	PA Harrisburg	Exempt	Production	80,983	5,021	1,174	42	239
117		Subtotal				193,807	12,016	2,810	126	717
118										
119		Total Exempt/Non-Exempt				4,230,765	248,641	60,038	2,058	11,713
120										
\$ 121		Bargaining/Exempt/Non-Exempt				\$ 7,908,847	\$ 476,682	\$ 113,370	\$ 4,242	\$ 24,144

LABOR EXPENSE FOR FULLY PROJECTED FUTURE TEST YEAR ENDED DECEMBER 31, 2019 - CALCULATION OF PAYROLL TAX

Line #	Employee ID #	Job Title	Office Location	Bargaining Exempt/Non-Exempt	Department	FPFTY 2019 Total	FPFTY 2019				
							FTY FICA 6.200%	FTY Medicare 1.450%	FUI 0.600%	SUI 2.905%	
Bargaining											
1	0000001005	Field Service Representative	PA Harrisburg	Bargaining	Customer Service Field/Meter	\$ 64,886	\$ 4,023	\$ 941	\$ 42	\$ 239	
2	00001177634	Field Service Representative	PA Harrisburg	Bargaining	Customer Service Field/Meter	58,380	3,620	847	42	239	
3	00001178403	Field Service Representative	PA Harrisburg	Bargaining	Customer Service Field/Meter	51,899	3,218	753	42	239	
4	00001176599	Field Service Representative	PA Harrisburg	Bargaining	Customer Service Field/Meter	64,886	4,023	941	42	239	
5	00001175239	Customer Serv Rep Office-Harr	PA Harrisburg	Bargaining	Customer Service Office	60,951	3,779	884	42	239	
6	00001178480	Customer Serv Rep Office-Harr	PA Harrisburg	Bargaining	Customer Service Office	48,756	3,023	707	42	239	
7	00001176579	Customer Serv Rep Office-Harr	PA Harrisburg	Bargaining	Customer Service Office	60,951	3,779	884	42	239	
8	00001177762	Customer Serv Rep Office-Harr	PA Harrisburg	Bargaining	Customer Service Office	60,951	3,779	884	42	239	
9	00001178715	Customer Serv Rep Office-Harr	PA Harrisburg	Bargaining	Customer Service Office	48,756	3,023	707	42	239	
10	00001173185	Customer Serv Rep Office-Harr	PA Harrisburg	Bargaining	Customer Service Office	60,951	3,779	884	42	239	
11	00001177669	Customer Serv Rep Office-Harr	PA Harrisburg	Bargaining	Customer Service Office	60,951	3,779	884	42	239	
12	00001175987	Customer Serv Rep Office-Harr	PA Harrisburg	Bargaining	Customer Service Office	60,951	3,779	884	42	239	
13	0000003025	Customer Serv Rep Office-Harr	PA Harrisburg	Bargaining	Customer Service Office	60,951	3,779	884	42	239	
14	0000000917	Maintenance Technician	PA Harrisburg	Bargaining	Maintenance	77,013	4,775	1,117	42	239	
15	0000000915	Maintenance Technician	PA Harrisburg	Bargaining	Maintenance	77,013	4,775	1,117	42	239	
16	0000001239	Maintenance Technician	PA Harrisburg	Bargaining	Maintenance	77,013	4,775	1,117	42	239	
17	00001170134	Electrician	PA Harrisburg	Bargaining	Maintenance	80,346	4,981	1,165	42	239	
18	start 1/1/2019	Electrician/SCADA	PA Bloomsburg	Bargaining	Maintenance	72,467	4,493	1,051	42	239	
19	00000001028	Maintenance Technician	PA Harrisburg	Bargaining	Production	80,318	4,980	1,165	42	239	
20	00001177000	Relief Operator-Harrisburg	PA Harrisburg	Bargaining	Production	75,880	4,705	1,100	42	239	
21	00001172861	Relief Operator-Harrisburg	PA Harrisburg	Bargaining	Production	79,480	4,928	1,152	42	239	
22	0000000939	Plant Operator-Harrisburg	PA Harrisburg	Bargaining	Production	78,346	4,857	1,136	42	239	
23	00000001027	Plant Operator-Bloomsburg	PA Bloomsburg	Bargaining	Production	73,538	4,559	1,066	42	239	
24	00001172607	Plant Operator-Harrisburg	PA Harrisburg	Bargaining	Production	78,346	4,857	1,136	42	239	
25	00001173622	Plant Operator-Bloomsburg	PA Bloomsburg	Bargaining	Production	76,004	4,712	1,102	42	239	
26	00001173664	Plant Operator-Bloomsburg	PA Bloomsburg	Bargaining	Production	76,004	4,712	1,102	42	239	
27	0000000941	Plant Operator-Harrisburg	PA Harrisburg	Bargaining	Production	78,346	4,857	1,136	42	239	
28	00001174842	Plant Operator-Bloomsburg	PA Bloomsburg	Bargaining	Production	76,004	4,712	1,102	42	239	
29	00000001233	Plant Operator-Harrisburg	PA Harrisburg	Bargaining	Production	78,346	4,857	1,136	42	239	
30	00001172936	Plant Operator-Harrisburg	PA Harrisburg	Bargaining	Production	78,346	4,857	1,136	42	239	
31	0000000925	Plant Operator-Harrisburg	PA Harrisburg	Bargaining	Production	78,346	4,857	1,136	42	239	
32	00000002925	Crew Chief-Bloomsburg	PA Bloomsburg	Bargaining	System Maint Distribution	77,817	4,825	1,128	42	239	
33	00000001029	Utility A Person -Bloomsburg	PA Bloomsburg	Bargaining	System Maint Distribution	74,578	4,624	1,081	42	239	
34	00001172842	Utility A Person -Bloomsburg	PA Bloomsburg	Bargaining	System Maint Distribution	74,578	4,624	1,081	42	239	
35	00000001035	Utility B Person -Bloomsburg	PA Bloomsburg	Bargaining	System Maint Distribution	65,569	4,065	951	42	239	
36	0000000972	Equipment Operator-Harrisburg	PA Harrisburg	Bargaining	System Maint Distribution	84,776	5,256	1,229	42	239	
37	00001170305	Utility Worker-Harrisburg	PA Harrisburg	Bargaining	System Maint Distribution	75,767	4,698	1,099	42	239	
38	00000001073	Utility Worker-Harrisburg	PA Harrisburg	Bargaining	System Maint Distribution	75,767	4,698	1,099	42	239	
39	00001172732	Utility Worker-Harrisburg	PA Harrisburg	Bargaining	System Maint Distribution	75,767	4,698	1,099	42	239	
40	00001170352	Utility Worker-Harrisburg	PA Harrisburg	Bargaining	System Maint Distribution	75,767	4,698	1,099	42	239	
41	0000000499	Equipment Operator-Harrisburg	PA Harrisburg	Bargaining	System Maint Distribution	84,776	5,256	1,229	42	239	
42	00001172001	Utility Worker-Harrisburg	PA Harrisburg	Bargaining	System Maint Distribution	75,767	4,698	1,099	42	239	
43	00001176622	Utility Worker-Harrisburg	PA Harrisburg	Bargaining	System Maint Distribution	75,767	4,698	1,099	42	239	
44	00001172012	Utility Worker-Harrisburg	PA Harrisburg	Bargaining	System Maint Distribution	75,767	4,698	1,099	42	239	
45	00000001015	Leader-Harrisburg	PA Harrisburg	Bargaining	System Maint Distribution	87,661	5,435	1,271	42	239	
46	00000001164	Leader-Harrisburg	PA Harrisburg	Bargaining	System Maint Distribution	87,661	5,435	1,271	42	239	
47	0000000980	Field Service Representative	PA Harrisburg	Bargaining	System Maint Distribution/Meter	72,795	4,513	1,056	42	239	
48	00001172754	Utility Worker-Harrisburg	PA Harrisburg	Bargaining	System Maint Distribution	75,767	4,698	1,099	42	239	
49	00001176303	Utility Worker-Harrisburg	PA Harrisburg	Bargaining	System Maint Distribution	75,767	4,698	1,099	42	239	
50	0000000924	Utility Worker-Harrisburg	PA Harrisburg	Bargaining	System Maint Distribution	75,767	4,698	1,099	42	239	
51	00000001467	Leader-Harrisburg	PA Harrisburg	Bargaining	System Maint Distribution	87,661	5,435	1,271	42	239	
52	start 1/1/2019	Utility B Person	PA Bloomsburg	Bargaining	System Maint Distribution	67,960	4,176	977	42	239	
53		Subtotal				3,778,271	234,253	54,785	2,184	12,431	
54											
55	Vacancies	None									
56		Subtotal									
57											
58	Projected New Hires	None									
59		Subtotal									
60											
61		Total Bargaining				3,778,271	234,253	54,785	2,184	12,431	

LABOR EXPENSE FOR FULLY PROJECTED FUTURE TEST YEAR ENDED DECEMBER 31, 2019 - CALCULATION OF PAYROLL TAX

Line #	Employee ID #	Job Title	Office Location	Bargaining Exempt/Non-Exempt	Department	Total	FTY FICA	FTY Medicare	FUI	SUI
61	Non-Exempt/Exempt						6 200%	1 450%	0 600%	2 3905%
62	0000000986	Superintendent	PA Bloomsburg	Exempt	Administration - General	\$ 101,967	\$ 6,322	\$ 1,479	\$ 42	\$ 239
63	00001178714	Manager Water Quality	PA Harrisburg	Exempt	Administration - General	106,753	6,619	1,548	42	239
64	00001176983	NRW Specialist	PA Harrisburg	Exempt	Administration - General	60,466	3,749	877	42	239
65	00001173794	Water Quality Specialist	PA Harrisburg	Exempt	Administration - General	73,511	4,558	1,066	42	239
66	00001177800	Data & Asset Mgmt Specialist	PA Harrisburg	Exempt	Administration - General	74,362	4,610	1,078	42	239
67	0000000986	General Manager	PA Harrisburg	Exempt	Administration - General	298,914	18,533	4,334	42	239
68	00001175835	Director Operations	PA Harrisburg	Exempt	Administration - General	179,607	11,136	2,604	42	239
69	00001173315	Administrative Coordinator	PA Harrisburg	Exempt	Administration - General	76,406	4,737	1,108	42	239
70	00001173428	Senior Engineer	PA Harrisburg	Exempt	Administration - General	130,863	8,114	1,898	42	239
71	00001176771	Manager Env Health & Safety	PA Harrisburg	Exempt	Administration - General	111,301	6,901	1,614	42	239
72	00001173659	Water Quality Specialist	PA Dallas	Exempt	Administration - General	77,190	4,786	1,119	42	239
73	00001172860	Public Affairs Mgr	PA Harrisburg	Exempt	Communications	120,203	7,453	1,743	42	239
74	00001178243	Supervisor Customer Service	PA Harrisburg	Exempt	Customer Service Office	83,546	5,180	1,211	42	239
75	00001176511	Manager Customer Service	PA Harrisburg	Exempt	Customer Service Office	123,487	7,656	1,791	42	239
76	00001176098	GIS Lead	PA Harrisburg	Exempt	Engineering	65,279	4,047	947	42	239
77	00001178284	Project Manager Engineering	PA Harrisburg	Exempt	Engineering	83,546	5,180	1,211	42	239
78	00001170362	Manager Engineering	PA Harrisburg	Exempt	Engineering	131,304	8,141	1,904	42	239
79	00001178568	Engineer	PA Harrisburg	Exempt	Engineering	74,634	4,627	1,082	42	239
80	00001178748	Construction Coordinator	PA Harrisburg	Exempt	Engineering	81,327	5,042	1,179	42	239
81	00001178271	Financial Analyst	PA Harrisburg	Exempt	Financial Planning	70,179	4,351	1,018	42	239
82	00001173787	Data Analyst	PA Harrisburg	Exempt	Financial Planning	55,697	3,453	808	42	239
83	00001173787	Director Finance	PA Harrisburg	Exempt	Financial Planning	146,207	9,065	2,120	42	239
84	00001174828	Assistant Manager Operations	PA Harrisburg	Exempt	Production	54,968	3,453	808	42	239
85	00001175056	Superintendent Production	PA Harrisburg	Exempt	Production	107,432	6,561	1,558	42	239
86	00001173102	Automated System Spec	PA Harrisburg	Exempt	Production	99,824	6,189	1,447	42	239
87	00001176485	Assistant Supervisor Prod/T&D	PA Bloomsburg	Exempt	Production	76,491	4,742	1,109	42	239
88	0000000197	Superintendent Production	PA Bloomsburg	Exempt	Production	84,162	5,218	1,220	42	239
89	start 1/1/2019	Supervisor Prod	PA Harrisburg	Exempt	Production	80,983	5,021	1,174	42	239
90	00001178419	Superintendent T&D	PA Harrisburg	Exempt	System Maint Distribution	101,364	6,285	1,470	42	239
91	start 1/1/2019	Supervisor T&D	PA Harrisburg	Exempt	System Maint Distribution	86,397	5,357	1,253	42	239
92	0000000933	Non-Revenue Water Technician	PA Harrisburg	Non-exempt	Administration - General	81,188	5,034	1,177	42	239
93	start 1/1/2019	Admin Assistant Bloom (Part Time)	PA Bloomsburg	Non-exempt	Administration - General	28,815	1,787	418	42	239
94	00001175840	Admin Asst	PA Harrisburg	Non-exempt	Engineering	61,255	3,798	888	42	239
95	00001173427	Accounting Rep	PA Harrisburg	Non-exempt	Financial Planning	63,250	3,921	917	42	239
96	0000000967	Lead Operator	PA Mechanicsburg	Non-exempt	Production	87,768	5,442	1,273	42	239
97	00001172494	Office Asst (Part Time)	PA Harrisburg	Non-exempt	Production	47,783	2,963	693	42	239
98	0000000955	Operator	PA Mechanicsburg	Non-exempt	Production	78,785	4,885	1,142	42	239
99	0000000973	Operator	PA Mechanicsburg	Non-exempt	Production	78,785	4,885	1,142	42	239
100	00001173628	Utility Person	PA Mechanicsburg	Non-exempt	System Maint Distribution	55,266	3,427	801	42	239
101	00001176343	Utility Person	PA Mechanicsburg	Non-exempt	System Maint Distribution	72,685	4,506	1,054	42	239
102	00001175781	Utility Person	PA Mechanicsburg	Non-exempt	System Maint Distribution	72,685	4,506	1,054	42	239
103	00001175433	Utility Person	PA Mechanicsburg	Non-exempt	System Maint Distribution	72,685	4,506	1,054	42	239
104	0000000931	Utility Person	PA Mechanicsburg	Non-exempt	System Maint Distribution	72,685	4,506	1,054	42	239
105	00001172493	Office Asst	PA Harrisburg	Non-exempt	System Maint Distribution	52,404	3,249	760	42	239
106	00001174804	Foreperson	PA Harrisburg	Non-exempt	System Maint Distribution	84,577	5,244	1,226	42	239
107	00001175450	Field Services Tech	PA Dallas	Non-exempt	System Maint Distribution/Meter	62,850	3,897	911	42	239
108	00001172919	Field Services Tech	PA Dallas	Non-exempt	System Maint Distribution/Meter	70,157	4,350	1,017	42	239
109	00001178112	Field Services Tech	PA Dallas	Non-exempt	System Maint Distribution/Meter	62,284	3,862	903	42	239
110	0000001014	Foreperson	PA Dallas	Non-exempt	System Maint Distribution	85,909	5,326	1,246	42	239
111		Subtotal				4,350,188	269,712	63,078	2,058	11,713
112										
113	Vacancies	None								
114		Subtotal								
115										
116	Projected New Hires	None								
117		Subtotal								
118										
119		Total Exempt/Non-Exempt				4,350,188	269,712	63,078	2,058	11,713
120										
121		Total Bargaining/Exempt/Non-Exempt				8,128,460	503,964	117,863	4,242	24,144

SWPA STATEMENT NO. 2R

BEFORE THE
PENNSYLVANIA PUBLIC UTILITY COMMISSION

DOCKET NO. R-2018-3000834

PREPARED REBUTTAL TESTIMONY

OF

CONSTANCE E. HEPPENSTALL

REGARDING

INCOME STATEMENT, OPERATING REVENUES AND EXPENSE ADJUSTMENTS

SUEZ WATER PENNSYLVANIA INC.

AUGUST 17, 2018

1 SWPA STATEMENT NO. 2
2 REBUTTAL TESTIMONY OF CONSTANCE E. HEPPENSTALL
3 REGARDING INCOME STATEMENT, OPERATING REVENUES
4 AND EXPENSE ADJUSTMENTS
5

6 **INTRODUCTION**

7 **Q. What is your name and business address?**

8 A. Constance E. Heppenstall. My business address is 1010 Adams Avenue, Audubon, PA
9 19403.
10

11 **Q. BY WHOM ARE YOU EMPLOYED AND IN WHAT CAPACITY?**

12 A. I am employed by Gannett Fleming Valuation and Rate Consultants, LLC as a Project
13 Manager.

14 **Q. Have you testified previously in this matter?**

15 A. Yes. I submitted direct testimony, which was dated April 30, 2018 and sponsored Exhibit
16 CEH-1 and CEH-2.

17 **Q. What is the purpose of your testimony?**

18 A. My rebuttal testimony will address the concerns reflected in the testimony of I&E Witness
19 Brenton Grab and OCA Witnesses Jerome Mierzwa and Lafayette Morgan. In addition, I
20 will sponsor rebuttal Exhibits CEH-1-R and CEH-2-R which reflect the Company's rate
21 base and expense adjustments for its rebuttal case.

22 **MAHONING TOWNSHIP ACQUISITION**

23 **Q. For reasons listed in their respective testimonies, Mr. Grab, Mr. Mierzwa and Mr.
24 Morgan recommend removing the Mahoning Township acquisition in this rate case.**

25 **What is the Company's position?**

1 A. The Company has agreed to remove the Mahoning Acquisition from the rate case.
2 Removing the Mahoning Township Acquisition from the rate case entails a revision to rate
3 base and depreciation expense, per Mr. Spanos' rebuttal testimony, removing present and
4 proposed revenues related to the acquisition, and eliminating operation and maintenance
5 expense related to the acquisition. Exhibits CEH-1-R and CEH-2-R reflect these
6 adjustments.

7 **Q. Please describe the adjustment to present and proposed revenues due to the**
8 **Mahoning Acquisition.**

9 A. Present and proposed revenues will decline by \$712,877 and \$930,659 respectively by
10 eliminating the adjustment for the Mahoning Township Acquisition revenues on Exhibit
11 CEH-1, Schedule 9.3.

12 **Q. Please describe the adjustment to operation and maintenance expense related to the**
13 **Mahoning Township Acquisition.**

14 A. Operation and Maintenance expense for the Fully Projected Future Test Year (FPFTY) will
15 decrease by \$430,783 shown in Exhibit No. CEH-2 on Schedule 29. In addition, the
16 Company will change its labor adjustment in the FPFTY to eliminate the additional labor
17 cost related to the Mahoning Township Acquisition of \$39,845 (net of capitalized labor
18 and after reallocation of overtime) as shown on Exhibit No. CEH-2, Schedule-2. Employee
19 Group Health and Life Insurance will be reduced by \$14,392 as a result of the loss of this
20 employee. In addition, 401K Matching is reduced by \$2,091 (Exhibit CEH-2R, Schedule-
21 6), and Payroll taxes are reduced by \$5,434 in the FPFTY (Exhibit CEH-2R, Schedule-32).
22 Finally, Fringe Benefits Transferred increased by \$7,198.

23

1 ROUTE 15 TERRITORY EXPANSION

2 Q. Mr. Morgan denies the inclusion of costs and revenue related to the Route 15 Service
3 Territory Expansion. Do you agree?

4 A. No. As part of his argument, Mr. Morgan claims that the Company has not provided the
5 Commission with items it has requested. These items are as follows:

6 Requirement A: SUEZ Water Pennsylvania, Inc.'s actual contribution amount toward the
7 cost of installing the proposed 16-inch diameter water main extension and any customer
8 advances for construction.

9 Response: The Company indicated in its filing that the Company would contribute
10 \$8,900,000 for the costs of the project, which Mr. Morgan acknowledges. At the time of
11 the filing, the Company had no information on Customer Advances related to the project.

12 Requirement B: All accounting entries which record the costs of the proposed main
13 extension.

14 Response: As of the filing, the Company did not have any costs related to the proposed
15 main extension which would precipitate accounting entries.

16 Requirement C: A cost comparison that quantifies the estimated cost of completing this
17 water main extension utilizing an 8-inch diameter ductile iron water pipe in lieu of the
18 proposed 16-inch diameter ductile iron water pipe.

19 Response: Company engineers have indicated that it is not feasible to replace the 16-inch
20 diameter main with an 8-inch diameter main due to the negative impact on the hydraulics
21 and would not be considered in accordance with sound engineering practices. In any case,
22 the Company estimates that the cost differential to utilize an 8-inch main is estimated to be
23 \$900,000.

1 Mr. Morgan also expresses skepticism that the project will be complete by December 31,
2 2019. The Company has indicated that the design for this project is almost complete and
3 the Company is on track to have the project used and useful by December 31, 2019.
4 Therefore, the Company rejects Mr. Morgan's recommendation to remove the costs of the
5 Route 15 Territory Expansion from the rate case.

6 **ADMINISTRATIVE OFFICE BUILDING**

7 **Q. Mr. Morgan notes that the Company included in rate base the cost of the new**
8 **administrative building as well as the expense for a lease of the old administrative**
9 **building is inappropriate.**

10 **A.** After further review, the Company agrees that the cost related to the lease of the old
11 administrative building should be excluded from the rate case. However, the new
12 administrative building will incur additional real estate taxes and utility costs for the
13 Company. These additional costs are detailed below.

1

Projected Property Taxes (a)	\$ 33,882
Less Current Property Taxes (50% per Lease)	\$ (9,280)
Additional Taxes	<u>\$ 24,602</u>
Additional Utilities based on a 57% larger space	
Present UGI Gas Costs	2,478
Present PPL Electric Costs	<u>7,376</u>
Total Utilities	<u>\$ 9,854</u>
Proposed Utilities based on 57% more square footage	\$ 15,470
Additional Utilities Paid	\$ 5,617
Total Additional Costs for New Building	30,219
Less Lease Cost of Prior Building	<u>(\$60,476)</u>
Net Savings by Eliminating Lease of Prior Building	<u>(\$30,258)</u>

2

(a) Based on a millage of 27.10588 multiplied by the value of the New Admin Building of \$1,250,000.

3

Therefore, the revenue requirement should only reflect a net adjustment of (\$30,258)

4

which is reflected in Exhibit CEH-2R, Schedule-16.

5

REVENUE ANNUALIZATION

6

Q. Mr. Morgan makes a \$14,415 adjustment to present rate revenue by using the

7

trendline rather than the slope on actual method used by the Company.

8

A. The Company believes that its methodology is more conservative than Mr. Morgan's

9

methodology but has no objection to his methodology. However, Exhibit CEH-2R is

10

based on the Company methodology for calculating present and proposed revenues as the

11

Company lacks the detail regarding Mr. Morgan's calculation of the change in revenue

12

including the change in overall consumption.

13

1 **PAYROLL EXPENSES AND EMPLOYEE BENEFITS EXPENSES**

2 **Q. Mr. Morgan adjusts payroll and employee benefits expenses. Do you agree with his**
3 **adjustments?**

4 **A.** Yes and no. I agree with his adjustment for the salary and benefits of the employee
5 related to the Mahoning Township Acquisition which I have discussed. However, I
6 disagree with his adjustment of including only 6-months of the salary and benefits for the
7 other four new employees. These employees will be working for the Company after the
8 FPFTY and the Company will be paying their salaries and benefits. Waiting until the
9 next rate case for the Company to fully recover their salaries and benefits is not sound
10 rate making policy. The full amount of their salaries and benefits should be included in
11 the costs for the FPFTY.

12 **PENSION EXPENSE**

13 **Q. Mr. Morgan adjusts pension expense to reflect the FTY amount of \$1,409,589 rather**
14 **than the FPFTY amount of \$1,442,010. Do you agree?**

15 **A.** No, denying the Company an increase to pension expense for the FPFTY ignores that fact
16 that this expense has been increasing at an average rate of 2.9%.

Year	Expense	Percent Increase
2015	1,296,903	
2016	1,411,753	8.86%
2017	1,425,022	0.94%
FTY	1,409,589	-1.08%
	Average	2.90%

17
18 The increase requested by the Company of 2.3% is a conservative request. The Company
19 rejects Mr. Morgan’s adjustment.

PURCHASED WATER EXPENSES

1
2 **Q. Both Mr. Morgan and Mr. Grab adjust Purchased Water expense to remove the**
3 **inflation adjustment for the FTY and the FPFTY and disallows the Company's**
4 **increase in this expense related to purchasing water from the Susquehanna Area**
5 **Regional Airport Authority (SARAA). What is the basis for their adjustments?**

6 A. First, the witnesses state that there is not sufficient evidence to support the utilization of
7 the inflationary increases for this expense. However, as the attached response to Data
8 Request OCA-IV-37 (attached in Exhibit CEH-3R) clearly shows, the average increase
9 for the price of water from 2008 through 2016 was 4.1%, lower than the requested 2.3%
10 inflation factor. In addition, though Mr. Morgan's chart on page 22 of his direct
11 testimony shows that the purchased water cost per 1000 gallons is declining, he failed to
12 mention the Company's explanation in its response to OCA-IV-37 part c. that the
13 decrease in this expense was because the Company was able to buy less water from
14 Steelton (a high cost producer) in 2017.

15 Second, both witnesses deny the additional costs related to buying water from
16 SARAA because of a prior contamination issue. The contamination issue has been
17 resolved by SARAA, and after Company internal testing of SARAA water, the Company
18 will be purchasing water from SARAA as it has in the past. We have attached in Exhibit
19 CEH-3R the 2017 Annual Drinking Water Quality Report for the Water System at
20 Harrisburg International Airport issued on behalf of SARAA that states that its drinking
21 water now meets all federal and state requirements.

22 The Company rejects both witnesses' adjustments to Purchased Water expense.
23

PURCHASED POWER EXPENSE

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22

Q. Both Mr. Grab and Mr. Morgan adjust Purchased Power Expense to exclude inflationary increases to the expense in the FTY and the FPFTY. Do you agree?

A. Yes, the Company agrees that no inflationary adjustment should be made for this expense. However, Mr. Morgan appears to not only remove the inflation expense, but he also does not use a 3-year average of this expense which is proposed by the Company. In fact, it appears that he decreases the FPFTY expense to \$1,242,836, which is the amount recorded in the Purchased Power expense account for 2017. However, this amount excludes the \$161,516 of Purchased Power Expense which the Company has shown in Schedule-9 was erroneously booked in Fuel for Power Production and should be added to the per books amount of \$1,242,836 to equal the actual expense of \$1,404,353 in 2017. In addition, in his testimony, Mr. Grab misunderstood and assumed that the 2017 Purchased Power Expense of \$1,404,353 should be adjusted downward as the \$161,516 was actually Fuel for Power, when it is actually Purchased Power. The \$1,404,353 is the adjusted amount of Purchased Power expense, reflecting the addition of \$166,335. Therefore, the Company is correct in using \$1,404,353 as 2017 expense for calculating the 3-year average for this expense.

Q. It seems that the Company has sent out data regarding Purchased Power expense that was confusing. Can you please clarify?

A. Yes. As outlined in Mr. Grab's testimony, the annual amount of Purchase Power expense reflected in OCA-IV-38 and I&E-RE-28b is different than what was shown in response to OCA-IV-39 and different than what was recorded by NARUC 615 account in 2015,

1 2016, and 2017. The differences occurred due to the varying sources of the data which
2 did not reflect any timing differences, adjustments or accruals.

3 **Q. In light of these conflicting amounts, which annual costs do you recommend for the**
4 **3-year average of Purchased Power Expense?**

5 A I recommend the amount recorded in NARUC Account 615 for the years 2015 and 2016
6 and the corrected amount as described above for 2017. The 3-year average of Purchased
7 Power expense without increases for inflation results in a FPFTY expense of \$1,411,713,
8 a reduction of \$158,974 from the filed expense of \$1,570,688.

9 **MATERIALS AND SUPPLIES**

10 **Q. Mr. Morgan adjusts Materials and Supplies Expense by averaging the expense in**
11 **2016 and 2017, excluding 2015. Do you agree?**

12 A. Yes, I agree that the Company made an accounting change in 2015 that will affect this
13 account in the future. Therefore, I agree with Mr. Morgan's adjustment.

14
15 **MANAGEMENT AND SERVICE FEE**

16 **Q. Company Witness James C. Cagle will be addressing Management and Service Fee**
17 **in his rebuttal testimony. Did you incorporate his adjustments to this expense in**
18 **your exhibits?**

19 A. Yes. I reduced Management and Services by \$101,961 in the FTY and by \$139,936 in
20 the FPFTY.

21 **OUTSIDE CONTRACTOR'S EXPENSE**

22 **Q. Mr. Morgan revises the amount for Western Union Payments and includes only the**
23 **anticipated increase to this expense. Why is he incorrect?**

1 A. Mr. Morgan, in his adjustment to Western Union Payments, assumes that the Company is
2 currently paying the Western Union fees. That is not the case. The Company's customers
3 are currently paying these fees. The Company is proposing to pay these fees instead of
4 charging the customers. Therefore, the full amount of the \$150,000 should be included in
5 the revenue requirement.

6 **Q. Mr. Morgan also normalizes the two additional studies, the Non-Revenue Water
7 (NRW) and Inventory Process Studies, over 4-years. Do you agree?**

8 A. No, the Company's position continues to be that these studies should be normalized over
9 2-years.

10 **Q. In his direct testimony, I&E Witness Brenton Grab denies Company expenses for
11 both the NRW and Inventory Process Studies because bids have not been received
12 for the studies. How do you respond?**

13 A. The Company is performing both studies to comply with PUC recommendations. The
14 NRW Study should be completed every two years until the Company achieves a NRW
15 percentage acceptable to the Pennsylvania PUC and both this report and the Inventory
16 Process project result from the PUC's recommendations listed in the Focused
17 Management and Operations Audit from 2017 and both studies need to be funded in this
18 rate case. In addition, the Company has subsequently received two bids for the NRW
19 Study. These bids are attached in Exhibit CEH-3R. The Company rejects Mr. Grab's
20 adjustment to Outside Contractor's Expense.

21 **TRANSPORTATION EXPENSE**

22 **Q. Mr. Morgan adjusts Transportation Expense by averaging the expense in 2016 and
23 2017, excluding 2015. Do you agree?**

1 A. Yes, I agree that the Company made an accounting change in 2015 that will affect this
2 account in the future. Therefore, I agree with Mr. Morgan's adjustment.

3 **PAYROLL TAXES**

4 **Q. Mr. Morgan adjusts payroll taxes. Do you agree with his adjustment?**

5 A. Mr. Morgan adjusts payroll taxes to be in line with his labor adjustments. Since I
6 disagree with his labor adjustment, I disagree with his payroll tax adjustment.

7 **REAL ESTATE TAXES**

8 **Q. Mr. Grab adjusts the expense for Real Estate Taxes to disallow inflation
9 adjustments. Do you agree?**

10 A. No, the Company believes that it is reasonable to adjust the costs for Real Estate Taxes
11 by inflation. Taxes are set by local authorities which experience an inflationary increase
12 in costs year after year just like the Company. These costs are typically passed on to
13 taxpayers in the form of a tax increase often equal to or exceeding the cost of inflation.

14 **RATE CASE EXPENSE**

15 **Q. Mr. Grab states that rate case expense should be normalized, not amortized. Do
16 you agree?**

17 A. Yes, I agree.

18 **RATE BASE**

19 **Q. How did the Company develop its original cost measure of value balances for the
20 FPFTY?**

21 A. The Company has presented supporting data for a FPFTY consisting of the twelve
22 months ending December, 2019 as permitted by the amendments to the Public Utility

1 Code made by Act 11. As a result, the Company's rate base claim reflects its projection
2 of utility plant in service as of December 31, 2019.

3 **Q. Please summarize OCA witness Morgan's and I&E witness Cline's position.**

4 A. Both witnesses disagree with the Company's use of FPFTY ending balances and opine
5 that average balances should be used to calculate plant in service, accumulated
6 depreciation and accumulated deferred income taxes.

7 **Q. Does the Company agree with either witness?**

8 A. No.

9 **Q. Does Act 11, amending Section 315 of the Pennsylvania Public Utility Code, require
10 that the utility must utilize average plant balances when developing its rate base
11 using a FPFTY?**

12 A. No it does not. I am advised by counsel that Section 315 states that the Commission may
13 permit facilities which are projected to be in service during the fully projected future test
14 year to be included in the rate base. For this reason, the Company believes its use of
15 ending balances is proper.

16 **Q. Has the Company made any adjustments to rate base (other than the elimination of
17 the rate base related to the Mahoning Acquisition)?**

18 A. Yes. The Company split out the TCJA Regulatory Liability from Deferred Taxes and
19 included the tax effect of the Regulatory Liability Amortization as an adjustment to
20 Deferred Taxes. Please refer to the rebuttal testimony of Mr. Cagle for additional detail.

21 **OTHER ADJUSTMENTS**

22 **Q. Did the Company make other adjustments to its rate model?**

1 A. Yes, the Company revised its labor adjustment workpapers to reflect the addition of four
2 new employees as of 1/1/2019 rather than 1/1/2018. Finally, income taxes were adjusted
3 based on the revised revenue requirement.

4
5 **Q. Does this conclude your rebuttal testimony?**

6 A. Yes. However, I reserve the right to supplement my testimony as additional issues and
7 facts arise during the course of the proceeding. Thank you.



SUEZ WATER PENNSYLVANIA INC.

HARRISBURG, PENNSYLVANIA

**INCOME STATEMENT AND
PRO FORMA REVENUES
AS OF DECEMBER 31, 2019
INCOME STATEMENT
RATE BASE**



Gannett Fleming

Excellence Delivered As Promised

SUEZ WATER PENNSYLVANIA INC.
REBUTTAL

STATEMENT OF THE CALCULATION OF THE RATE OF RETURN UNDER PRESENT RATES FOR THE TWELVE MONTHS ENDED DECEMBER 31, 2017, 2018 AND 2019
AND THE ANTICIPATED RATE OF RETURN UNDER PROPOSED RATES FOR THE YEAR ENDING DECEMBER 31, 2019

Line No.	Description (1)	12 Months Ended 31-Dec-17 (2)	Pro Forma FTY Adjustments		Pro Forma Present Rates, 31-Dec-18 (5)	Pro Forma FPFTY Adjustments and DSIC Adjustment		Pro Forma Present Rates, 31-Dec-19 (8)	Under Proposed Rates, Supplement No. ___ to Tariff Water Pa-PUC No. 7		
			Ref. (3)	Amount (4)		Ref. (6)	Amount (7)		Ref.	Increase (9)	Pro Forma 31-Dec-19 (10)
1	Operating Revenues	\$ 43,660,297	CEH-1 Sch 5	\$ (7,302)	\$ 43,652,995	CEH-1 Sch 4,5,7	\$ 3,070,000	\$ 46,722,995	CEH-1 Sch 2,7	\$ 5,352,005	\$ 52,075,000
2											
3	Operating Revenue Deductions:										
4	Operation and Maintenance										
5	Expenses	\$ 16,232,944	CEH-2	\$ 1,121,497	\$ 17,354,440	CEH-2	\$ 1,008,878	\$ 18,363,318	CEH-2	\$ 46,003	\$ 18,409,322
6	Taxes Other than Income	\$ 831,179	CEH-2	\$ 77,795	\$ 908,973	CEH-2	\$ 53,984	\$ 962,957	CEH-2	\$ -	\$ 962,957
7											
8											
9	Depreciation	7,361,991	CEH-2	691,340	8,053,332	CEH-2	562,130	8,615,462	CEH-2	\$ -	8,615,462
10	Amortization of Acquisition Adjustment	57,744	CEH-2	-	57,744	CEH-2	-	57,744	CEH-2	\$ -	57,744
11	Amortization of Regulatory Asset	(264,891)	CEH-2	-	(264,891)	CEH-2	-	(264,891)	CEH-2	\$ -	(264,891)
12											
13											
14	Total Operating										
15	Revenue Deductions	\$ 24,218,967	CEH-2	\$ 1,890,631	\$ 26,109,598	CEH-2	\$ 1,624,992	\$ 27,734,590	CEH-2	\$ 46,003	\$ 27,780,593
16											
17	Total Income Before Taxes and Return	\$ 19,441,330		\$ (1,897,933)	\$ 17,543,397		\$ 1,445,009	\$ 18,988,405		\$ 5,306,001	\$ 24,294,407
18											
19	Less Federal and State Taxes	\$ 6,832,581	CEH-2	\$ (3,056,910)	\$ 3,775,671		\$ 86,952	\$ 3,862,623	CEH-2	\$ 1,533,015	\$ 5,395,638
20											
21											
22	Net Operating Income										
23	Available for Return	\$ 12,608,749		\$ 1,158,977	\$ 13,767,726		\$ 1,358,057	\$ 15,125,782		\$ 3,772,986	\$ 18,898,768
24											
25											
26	Rate Base	\$ 190,763,193	CEH-1.1	\$ 12,260,610	\$ 203,023,803		\$ 34,733,836	\$ 237,757,639		\$ -	\$ 237,757,639
27											
28	Rate of Return	6.61%			6.78%			6.36%			7.95%

SUEZ WATER PENNSYLVANIA INC.

ORIGINAL COST MEASURE OF VALUE AS OF DECEMBER 31, 2017,
DECEMBER 31, 2018 AND DECEMBER 31, 2019

		<u>As of 12/31/2017</u>	<u>As of 12/31/2018</u>	<u>As of 12/31/2019</u>
Original Cost of Utility Plant In Service	(a)	\$ 340,882,879	\$ 361,574,023	\$ 403,249,792
Less: Accumulated Depreciation	(a)	<u>(70,281,368)</u>	<u>(78,561,485)</u>	<u>(85,189,362)</u>
Net Utility Plant		270,601,511	283,012,538	318,060,430
CIAC and Contributions		(63,114,693)	(63,114,693) (b)	(63,114,693) (b)
Add:				
Deferred Taxes		\$ (7,848,348)	\$ (8,086,056)	\$ (8,710,883)
TCJA Regulatory Liability		\$ (10,065,851)	\$ (10,065,851)	\$ (9,800,960)
Materials and Supplies		481,594	481,594	481,594
Cash Working Capital		<u>708,981</u>	<u>796,271</u>	<u>842,151</u>
Total Original Cost Measure of Value		<u>\$ 190,763,193</u>	<u>\$ 203,023,803</u>	<u>\$ 237,757,639</u>

(a) Source: Revised Exhibits JJS-1, JJS-2 and JJS-3.

(b) 2018 and 2019 CIAC and Advances included in total Net Utility Plant.

SUEZ WATER PENNSYLVANIA INC.

<u>TYPE OF CAPITAL</u>	<u>RATIOS</u>	<u>COST RATE</u>	<u>WEIGHTED COST RATE</u>
LONG-TERM DEBT	45.82%	4.65%	2.13%
COMMON EQUITY	54.18%	10.75%	5.82%
TOTAL	100.00%		7.95%

Source: Direct testimony of Dylan D'Ascendis.

SUEZ WATER PENNSYLVANIA INC.

HARRISBURG, PENNSYLVANIA

PRO FORMA EXPENSE ADJUSTMENTS

AS OF DECEMBER 31, 2019

REBUTTAL



Gannett Fleming

Excellence Delivered As Promised

Line No.	Account Number	Utility Operating Expenses	Adjustment No.	12-Months Ending 12/31/2017	Future Test Year Adjustments	Future Test Year 12/31/2018	Fully Projected Future Test Year Adjustments Present Rates	Fully Projected Future Test Year Under Present Rates 12/31/2019	Fully Projected Future Test Year Adjustments Proposed Rates	Fully Projected Future Test Year Under Proposed Rates 12/31/2019
1	601.0	Labor Expense	1	\$ 4,579,937	\$ 515,624	\$ 5,095,561	\$ 323,537	\$ 5,419,097		\$ 5,419,097
2	604.0	Employee Group Health & Life	2	1,323,689	13,126	1,336,815	88,314	1,425,129		1,425,129
3	604.0	Employee Pension Benefits	3	1,425,022	(15,433)	1,409,589	32,421	1,442,010		1,442,010
4	604.0	Employee Post Retirement Benefits Other than Pension	4	(457,246)	(73,478)	(530,724)	(12,207)	(542,931)		(542,931)
5	604.0	Other Employee Benefits	5	215,054	36,022	251,075	12,893	263,969		263,969
6	610.0	Purchased Water	6	68,621	7,555	76,176	106,752	182,928		182,928
7	615.0	Purchased Power	7	1,242,836	168,877	1,411,713	-	1,411,713		1,411,713
8	616.0	Fuel for Power Production	8	184,165	(161,001)	23,163	533	23,696		23,696
9	618.0	Chemicals	9	540,682	45,366	586,048	13,479	599,527		599,527
10	620.0	Materials and Supplies	10	254,476	(4,411)	250,065	5,751	255,816		255,816
11	634.0	Management and Service Fees	11	4,921,757	265,563	5,187,320	32,241	5,219,561		5,219,561
12	635.0	Lab Testing Fees	12	114,698	(32,810)	81,888	1,653	83,542		83,542
13	636.0	Outside Contractors	13	748,644	231,111	979,755	167,359	1,147,114		1,147,114
14	636.0	Outside Professional Services	14	64,321	2,339	66,660	1,533	68,193		68,193
15	641.0	Rental - Building/Real Property	15	60,330	146	60,476	(30,258)	30,219		30,219
16	642.0	Rental of Equipment	16	49,175	1,045	50,220	1,155	51,375		51,375
17	650.0	Transportation Expense	17	407,033	56,863	463,897	96,426	560,322		560,322
18	657.0	Prop& Gen Liab. Insurance	18	4,732	101	4,832	103	4,935		4,935
19	658.0	Worker Compensation	19	102,384	5,844	108,228	2,489	110,717		110,717
20	660.0	Advertising	20	3,517	75	3,592	83	3,674		3,674
21	666-667	Rate Case Expense - Amort	21	140,080	(11,674)	128,407	60,593	189,000		189,000
22	666-667	Regulatory Commission Expense	22	198,665	21,215	219,880	15,464	235,344	26,958	262,302
23	670.0	Bad Debt Expense	23	155,640	(298)	155,342	10,925	166,266	19,045	185,312
24	675.0	Fringe Benefit Expense Transfer	24	(1,059,720)	16,726	(1,042,994)	(56,096)	(1,099,090)		(1,099,090)
25	675.6	Office Expense and Utilities	25	446,337	(26,796)	419,541	121,353	540,894		540,894
26	675.9	Postage and Air Freight Expense	26	354,308	4,256	358,563	7,795	366,358		366,358
27	Various	Other O&M	27	143,806	55,547	199,353	4,585	203,938		203,938
28		Adjustments for Mahoning Twp Acquisition	28	\$ -	\$ -	\$ -	\$ -	\$ -		\$ -
29		Total Operation and Maintenance Expenses		\$ 16,232,944	\$ 1,121,497	\$ 17,354,440	\$ 1,008,878	\$ 18,363,318	\$ 46,003	\$ 18,409,322
30										
31		Inflation Rate Calculator	29		2.13%		2.30%			
32										
33		Taxes Other Than Income								
34		Real Estate Tax	30	\$ 270,553	\$ 40,472	\$ 311,025	\$ 7,154	\$ 318,178	\$ -	\$ 318,178
35		Payroll	31	560,626	37,323	597,949	46,830	644,779	-	644,779
36										
37		Total Taxes Other Than Income		\$ 831,179	\$ 77,795	\$ 908,973	\$ 53,984	\$ 962,957	\$ -	\$ 962,957
38										
39		Depreciation Expense	32	\$ 7,361,991	\$ 691,340	\$ 8,053,332	\$ 562,130	\$ 8,615,462	\$ -	\$ 8,615,462
40		Amortization of Acquisition Adjustment		\$ 57,744	\$ -	\$ 57,744	\$ -	\$ 57,744	\$ -	\$ 57,744
41		Amortization of Regulatory Liability	32	\$ -	\$ (264,891)	\$ (264,891)	\$ -	\$ (264,891)	\$ -	\$ (264,891)
42										
43										
44		Income Taxes	34	\$ 6,832,581	\$ (3,056,910)	\$ 3,775,671	\$ 86,952	\$ 3,862,623	\$ 1,533,015	\$ 5,395,638
45										
46		Total		\$ 31,316,439	\$ (1,166,278)	\$ 29,885,269	\$ 1,711,944	\$ 31,597,213	\$ 1,579,019	\$ 33,176,232

Line No.	Description	12 Months Ended 12/31/2017	Future Test Year	Fully Projected Future Test Year	
1	Labor Expense - net of capitalized/transferred in/out	\$ 4,579,937	\$ 5,095,561 (a)	\$ 5,419,097 (a)	\$ 39,845
2					
3	Total Labor Expense	<u>\$ 4,579,937</u>	<u>\$ 5,095,561</u>	<u>\$ 5,419,097</u>	
4					
5	Adjustment		\$ 515,624	\$ 323,537	
6					
7	<u>Reference Notes:</u>				
8	(a) See Workpaper CEH-2.1				
9					

Line No.		12 Months Ended 12/31/2017	Future Test Year	Fully Projected Future Test Year
1	Total Employee Pensions & Benefits	<u>\$ 1,323,689</u>	<u>\$ 1,336,815</u>	<u>\$ 1,425,129</u>
2				
3	Adjustment		\$ 13,126	\$ 88,314
4				
5			Future Test Year	Fully Projected Future Test Year
6	<u>Description</u>		<u>Year</u>	<u>Year</u>
7				
8	Medical Insurance		\$ 1,208,956 (a)	\$ 1,288,836 (b)
9				
10	Dental		72,607 (a)	77,405 (b)
11				
12	Group Life Insurance		<u>55,252 (a)</u>	<u>58,888 (b)</u>
13				
14	Total Employee Pensions & Benefits		<u>\$ 1,336,815</u>	<u>\$ 1,425,129</u>
15				
16		Number of	Average	Total Employees with
17	<u>New Employees Adjustment</u>	<u>New Employees</u>	<u>Cost of Coverage</u>	<u>Coverage (%)</u>
18	2018 Medical	4	\$ 15,112	84%
19	2018 Dental	4	835	92%
20	2018 Group Life			
21	Basic STD	4	34	100%
22	Basic LTD	4	294	100%
23	Basic Life 1X annual	4	114	23%
24	Basic Life 3 X annual	4	322	69%
25				
26	<u>Inflation Rate:</u>			
27	Fully Projected Future Test Year	2.300%		
28				
29	<u>Reference Notes:</u>			
30	(a) The company provided Future Test Year Employee Group Health and Life Insurance expenses.			
31	(b) Based on the the Future Test Year Cost with FPFTY Inflation Rate. The FPFTY Employee Group Health and Life Insurance			
32	expenses are adjusted for the four new employees in 2019. The new employee adjustment takes the number			
33	of new hires, multiplied by the average Cost of Coverage of existing employees and the			
34	percentage of existing employees with coverage, and added to the			
35	Future Test Year Insurance expenses. This adjustment is inflated usingthe FPFTY Rate of 2.3%.			

Line No.	Description	12 Months Ended 12/31/2017	Future Test Year	Fully Projected Future Test Year	
1	Employee Pension Benefits	\$ 1,425,022	\$ 1,409,589 (a)	\$ 1,442,010 (b)	\$ (32,421)
2					
3	Total Employee Pension Benefits	<u>\$ 1,425,022</u>	<u>\$ 1,409,589</u>	<u>\$ 1,442,010</u>	
4					
5	Adjustment		\$ (15,433)	\$ 32,421	
6					
7	<u>Inflation Rate:</u>				
8	Fully Projected Future Test Year	2.300%			
9					
10	<u>Reference Notes:</u>				
12	(a) Used 2018 estimated ASC 715-30 Net Periodic Pension Cost provided by Actuary.				
13	(b) Based upon Future Test Year cost with Fully Projected Future Test Year inflation rate.				

Line No.	Description	12 Months Ended 12/31/2017	Future Test Year	Fully Projected Future Test Year
1	Employee PEBOP Expense	\$ (457,246)	\$ (530,724)	\$ (542,931)
2				
3	Total Employee PEBOP Expense	<u>\$ (457,246)</u>	<u>\$ (530,724)</u>	<u>\$ (542,931)</u>
4				
5	Adjustment		\$ (73,478)	\$ (12,207)
6				
7	<u>Inflation Rate:</u>			
8	Fully Projected Future Test Year	2.300%		
9				
10	<u>Reference Notes:</u>			
11	(a) Used 2018 estimated ASC 715-30 Net Periodic Pension Cost provided by Actuary.			
12	(b) Based upon Future Test Year cost with Fully Projected Future Test Year inflation rate.			

Line No.	Description	12 Months Ended 12/31/2017	Future Test Year	Fully Projected Future Test Year
1	401K Matching	\$ 201,925	\$ 237,668 (a)	\$ 250,253 (b)
2				
3	Other Benefits	\$ 13,129	\$ 13,408 (c)	\$ 13,716 (d)
4				
5	Total 401K Matching and Other Benefits	\$ 215,054	\$ 251,075	\$ 263,969
6				
7	Adjustment		\$ 36,022	\$ 12,893
8				
9				
10	<u>Year</u>	<u>Gross Salary</u>	<u>401K Contribution (%)</u>	
11				
12	2018	7,655,710	3.10%	
13	2019	8,061,099	3.10%	
14				
15	<u>Inflation Rate:</u>			
16	Future Test Year	2.125%		
17	Fully Projected Future Test Year	2.300%		
18				
19	<u>Reference Notes:</u>			
20	(a) 401K Matching adjustment takes the Future Test Year's Gross Salary, multiplied by the			
21	Historic Test Year's 401K contribution percentage.			
22	(b) 401K Matching adjustment takes the Fully Projected Future Test Year's Gross Salary,			
23	multiplied by the Historic Test Year's 401K contribution percentage.			
24	(c) Based upon the Historic Test Year with the Future Test Year inflation rate.			
25	(d) Based upon the Future Test Year with the Fully Projected Future Test Year inflation rate.			

Line No.	Description	12 Months Ended 12/31/2017	Future Test Year	Fully Projected Future Test Year
1	Purchased Water	\$ 68,621	\$ 76,176 (a)	\$ 77,928 (b)
2				
3	Additional Purchased Water From Susquehanna Area Regional Airport Authority (SARAA)			105,000 (c)
4				
5	Total Purchased Water	\$ 68,621	\$ 76,176	\$ 182,928
6				
7	Adjustment		\$ 7,555	\$ 106,752
8				
9				
10		Cost of Water	Consumption 1000 Gal	
11	Year			
12	2015	\$ 84,246	16,208	
13	2016	\$ 70,906	12,811	
14	2017	\$ 68,621	13,612	
15	3 Year Average	\$ 74,591	14,210	
16				
17	Inflation Rate:			
18	Future Test Year	2.125%		
19	Fully Projected Future Test Year	2.300%		
20				
21	Reference Notes:			
22	(a) Based upon three year average with Future Test Year inflation rate.			
23	(b) Based upon Future Test Year cost with Fully Projected Future Test Year inflation rate.			
24	(c) The Company will begin purchasing water from SARAA in 2019 with a minimum take of \$105,000			

Line No.	Description	12 Months Ended 12/31/2017	Future Test Year	Fully Projected Future Test Year
1	Purchased Power Expense	\$ 1,242,836	\$ 1,411,713 (a)	\$ 1,411,713 (a)
2				
3	Adjustment		\$ 168,877	\$ -
4				
5		NARUC Power		Production
6	<u>Year</u>	<u>Expense</u>	<u>kWh</u>	<u>(MG)</u>
7	2015	\$ 1,363,806	18,781,378	6450.5071
8	2016	\$ 1,466,981	19,101,533	6414.6870
9	2017	\$ 1,404,353	18,124,940	6125.9850
10				
11	3 Year Average	\$ 1,411,713	18,669,284	6330.3930
12				
13	Adjustment Factor:			
14	Future Test Year	0.000%		
15	Fully Projected Future Test Year	0.000%		
16				
17	Reference Notes:			
18	(a) Based upon the 2017 actual expense adjusted for Fuel and Power Production that was included in Account 616 in Schedule 9.			
19				

Line No.	Description	12 Months Ended 12/31/2017	Future Test Year	Fully Projected Future Test Year
1	Fuel - Power Production	\$ 184,165	\$ 23,163 (a)	\$ 23,696 (b)
2				
3	Total Fuel for Power Production	<u>\$ 184,165</u>	<u>\$ 23,163</u>	<u>\$ 23,696</u>
4				
5	Adjustment		\$ (161,001)	\$ 533
6				
15	<u>Inflation Rate:</u>			
16	Future Test Year	2.125%		
17	Fully Projected Future Test Year	2.300%		
18				
19	<u>Reference Notes:</u>			
20	(a) Based upon historic test year Diesel Fuel for Generator expense with Future Test Year			
21	inflation rate.			
	(b) Based upon Future Test Year expense with Fully Projected Future Test Year inflation rate.			

Line No.	Description	12 Months Ended 12/31/2017	Future Test Year	Fully Projected Future Test Year
1	Chemical Expense	\$ 540,682	\$ 586,048 (a)	\$ 599,527 (b)
2				
3	Total Chemical Expense	<u>\$ 540,682</u>	<u>\$ 586,048</u>	<u>\$ 599,527</u>
4				
5	Adjustment		\$ 45,366	\$ 13,479
6				
7				
8	Year	Chemical Expense		
9	2015	\$ 597,781.13		
10	2016	583,097.19		
11	2017	540,682.11		
12				
13	3 Year Average	\$ 573,853.48		
14				
15	Inflation Rate:			
16	Future Test Year		2.125%	
17	Fully Projected Future Test Year		2.300%	
18				
19	Reference Notes:			
20	(a) Based upon three year average with Future Test Year inflation rate.			
21	(b) Based upon Future Test Year cost with Fully Projected Future Test Year inflation rate.			

Line No.	Description	12 Months Ended 12/31/2017	Future Test Year	Fully Projected Future Test Year	
1	Materials and Supplies	\$ 254,476	\$ 250,065 (a)	\$ 255,816 (b)	283439
2					\$ 27,623
3	Total Materials and Supplies	<u>\$ 254,476</u>	<u>\$ 250,065</u>	<u>\$ 255,816</u>	
4					
5	Adjustment		\$ (4,411)	\$ 5,751	
6					
7					
8					
9	<u>Year</u>	<u>Materials and Supplies Expense</u>			
10	2015	\$ 324,181			
11	2016	235,247			
12	2017	254,476			
13					
14	2 Year Average	\$ 244,861			
15					
16	Inflation Rate:				
17	Future Test Year	2.125%			
18	Fully Projected Future Test Year	2.300%			
19					
20	Reference Notes:				
21	(a) Based upon three year average with Future Test Year inflation rate.				
22	(b) Based upon Future Test Year cost with Fully Projected Future Test Year inflation rate.				

Line No.	Description	12 Months Ended 12/31/2017	Future Test Year	Fully Projected Future Test Year
1	Management & Service Fees	\$ 4,509,809	\$ 5,289,281 (a)	\$ 5,359,497 (b)
2				
3	Non-Recoverable Management Fees (c)	\$ 411,947 (b)	\$ -	\$ -
4				
5	Rebuttal		\$ (101,961)	\$ (139,936)
6	Total Management & Service Fees	<u>\$ 4,921,757</u>	<u>\$ 5,187,320</u>	<u>\$ 5,219,561</u>
7				
8				
9				
10	Adjustment		\$ 265,563	\$ 32,241
11				
12	Reference Notes:			
13	(a) Please see MFR III-06			
14	(b) Non-recoverable for rate making purposes.			
15				
16				

Line No.	Description	12 Months Ended 12/31/2017	Future Test Year	Fully Projected Future Test Year
1	Lab Testing Fees	\$ 114,698	\$ 81,888 (a)	\$ 83,542 (b)
2				
3	Total Lab Testing Fees	<u>\$ 114,698</u>	<u>\$ 81,888</u>	<u>\$ 83,542</u>
4				
5	Adjustment		\$ (32,810)	\$ 1,653
6				
7		Lab Testing	UCMR4	
8	<u>Year</u>	<u>Fees</u>	<u>Testing Fee</u>	
9	2015	\$ 71,150		
10	2016	69,635		
11	2017	114,698		
12				
13	2015 and 2016 Average	70,392	10,000	
14				
15	<u>Inflation Rate:</u>			
16	Future Test Year	2.125%		
17	Fully Projected Future Test Year	2.300%		
18				
19	<u>Reference Notes:</u>			
20	(a) Based upon two year average with Future Test Year inflation rate, plus the UCMR4			
21	testing fee normalized over three years.			
22	(b) Based upon Future Test Year cost with Fully Projected Future Test Year inflation rate.			

Line No.	Description	12 Months Ended 12/31/2017	Future Test Year	Fully Projected Future Test Year
1	Outside Contractors	\$ 748,644	\$ 754,755 (a)	\$ 772,114 (b)
2				
3	Additional Convenience Fees			150,000 (c)
4	NRW Study		150,000	150,000 (d)
5	Inventory Process Study		75,000	75,000 (d)
6				
7	Total Outside Contractors	<u>\$ 748,644</u>	<u>\$ 979,755</u>	<u>\$ 1,147,114</u>
8				
9	Adjustment		\$ 231,111	\$ 167,359
10				
11		Outside Contractor's		
12	<u>Year</u>	<u>Expense</u>		
13	2016	729,456		
14	2017	<u>748,644</u>		
15				
16	Two Year Average	<u>\$ 739,050</u>		

Inflation Rate:	
Future Test Year	2.125%
Fully Projected Future Test Year	2.300%

- Reference Notes:**
- (a) Based upon two year average with Future Test Year inflation rate.
 - (b) Based upon Future Test Year cost with Fully Projected Future Test Year inflation rate.
 - (c) Customers are no longer charged a convenience fee for using a credit card to pay water bills, as an incentive to move customers to e-billing. The company will take on \$150,000 in convenience fees in 2019.
 - (d) Two year normalization of Company studies.

Line No.	Description	12 Months Ended 12/31/2017	Future Test Year	Fully Projected Future Test Year
1	Outside Professional Services	\$ 64,321	\$ 66,660 (a)	\$ 68,193 (b)
2				
3	Total Outside Professional Services	<u>\$ 64,321</u>	<u>\$ 66,660</u>	<u>\$ 68,193</u>
4				
5	Adjustment		\$ 2,339	\$ 1,533
6				
7				
8				
9	<u>Year</u>	<u>Outside Professional Services Expense</u>		
10	2015	\$ 81,018		
11	2016	51,134		
12	2017	63,667		
13				
14	3 Year Average	\$ 65,273		
15				
16	Inflation Rate:			
17	Future Test Year		2.125%	
18	Fully Projected Future Test Year		2.300%	
19				
20	Reference Notes:			
21	(a) Based upon three year average with Future Test Year inflation rate.			
22	(b) Based upon Future Test Year cost with Fully Projected Future Test Year inflation rate.			

Suez Water Pennsylvania
 Docket No. R-2018-3000834
 Rent - Building and Real Property
 Account Number 50600

Exhibit No. CEH-2-R
 Schedule-16
 Adjustment No. 15
 Page 1 of 1

Line No.	Description	12 Months Ended 12/31/2017	Future Test Year	Fully Projected Future Test Year
1	Rent	\$ 60,330	\$ 60,476 (b)	\$ 30,219 (b)
2				
3	Total Rent	<u>\$ 60,330</u>	<u>\$ 60,476</u>	<u>\$ 30,219</u>
4				
5	Adjustment		\$ 146	\$ (30,258)
6				
7				
8		Rent	Contract	
	Year	Expense		
9	2017	\$ 120,952	2/1/17-1/31/18	
10	2018	\$ 120,952	2/1/18-1/31/19	
11	2019	\$ 120,952 (a)		

Reference Notes:

- (a) Company anticipates moving into a new building in December 2019. Value accounts for the old building's monthly rent from 2/1/19 to 12/31/19.
- (b) Includes additional taxes and utilities for the New Administrative building

Suez Water Pennsylvania
 Docket No. R-2018-3000834
 Rental of Equipment
 Account Number 50310

Exhibit No. CEH-2-R
 Schedule-17
 Adjustment No. 16
 Page 1 of 1

Line No.	Description	12 Months Ended 12/31/2017	Future Test Year	Fully Projected Future Test Year
1	Office Equipment Rental	\$ 49,175	\$ 50,220	\$ 51,375
2				
3	Total Office Equipment Rental	<u>\$ 49,175</u>	<u>\$ 50,220</u>	<u>\$ 51,375</u>
4				
5	Adjustment		\$ 1,045	\$ 1,155
6				
7	Inflation Rate:			
8	Future Test Year	2.125%		
9	Fully Projected Future Test Year	2.300%		
10				
11	Reference Notes:			
12	(a) Based upon historic test year with Future Test Year inflation rate.			
13	(b) Based upon Future Test Year cost with Fully Projected Future Test Year inflation rate.			

Line No.	Description	12 Months Ended 12/31/2017	Future Test Year	Fully Projected Future Test Year	
1	Leases	\$ 304,463.58	\$ 285,266.20 (a)	\$ 377,583.48 (a)	
2	Car Allowance	\$ 15,799.92	\$ 10,757.11 (b)	\$ 11,004.53 (c)	
3	Fuel	\$ 138,997.73	\$ 102,938.89 (b)	\$ 105,306.48 (c)	
4	Maintenance & Repair	\$ 139,310.78	\$ 113,072.70 (b)	\$ 115,673.37 (c)	
5	Payroll				
6	Insurance	\$ 24,059.59	\$ 31,109.30 (b)	\$ 31,824.81 (c)	
7	Depreciation				
8	Disposal of Vehicle	\$ (3,500.00)	\$ (1,191.46) (b)	\$ (1,218.86) (c)	
9	Other	\$ 5,997.68	\$ 106,490.39 (b)	\$ 108,939.67 (c)	
10					
11	Total Costs	\$ 625,129.28	\$ 648,443.13	\$ 749,113.48	
12					
13	Less Cap and Billed Out	\$ (218,095.94)	\$ (184,546.52) (b)	\$ (188,791.09) (c)	
14					
15	Total Transportation Expense	\$ 407,033.34	\$ 463,896.62	\$ 560,322.40	\$ 560,322.40
16	Less OCA Adjustment			\$ (73,983)	
17	Adjustment		\$ 56,863	\$ 22,443	
18					

Description	2015	2016	2017	3 Year Average
22 Car Allowance	\$ -	\$ 15,800	\$ 15,800	\$ 10,533
23 Fuel	\$ 42,744	\$ 120,649	\$ 138,998	\$ 100,797
24 Maintenance & Repair	\$ 44,547	\$ 148,302	\$ 139,311	\$ 110,720
25 Payroll				
26 Insurance	\$ 25,527	\$ 41,799	\$ 24,060	\$ 30,462
27 Depreciation				
28 Disposal of Vehicle	\$ -	\$ -	\$ (3,500)	\$ (1,167)
29 Other	\$ 302,486	\$ 4,340	\$ 5,998	\$ 104,275
30				
31 Less Cap and Billed Out	\$ (98,761)	\$ (225,263)	\$ (218,096)	\$ (180,707)
32				

Inflation Rate:

Future Test Year	2.13%
Fully Projected Future Test Year	2.30%

Reference:

(a) Based on projected 2018 costs for Future Test Year and 2019 costs for Fully Projected Future Test Year.
(b) Based upon three year average with Future Test Year inflation rate.
(c) Based upon Future Test Year cost with Fully Projected Future Test Year inflation rate.

Line No.	Description	12 Months Ended 12/31/2017	Future Test Year	Fully Projected Future Test Year
1	Property Insurance and General Corporate Liability Insurance	\$ 4,732	\$ 4,832 (a)	\$ 4,935 (b)
2				
3	Total	<u>\$ 4,732</u>	<u>\$ 4,832</u>	<u>\$ 4,935</u>
4				
5	Adjustment		\$ 101	\$ 103
6				
7	<u>Inflation Rate:</u>			
8	Future Test Year	2.13%		
9	Fully Projected Future Test Year	2.30%		
10				
11	<u>Reference Notes:</u>			
12	(a) Based upon historic test year average with Future Test Year inflation rate.			
13	(b) Based upon Future Test Year cost with Fully Projected Future Test Year inflation rate.			

Line No.	Description	12 Months Ended 12/31/2017	Future Test Year	Fully Projected Future Test Year
1	Worker Compensation	\$ 102,384	\$ 108,228 (a)	\$ 110,717 (b)
2				
3	Total Worker Compensation	<u>\$ 102,384</u>	<u>\$ 108,228</u>	<u>\$ 110,717</u>
4				
5	Adjustment		\$ 5,844	\$ 2,489

Inflation Rate:

Fully Projected Future Test Year 2.30%

Reference Notes:

(a) The estimate is referenced from MFR III-23 response for future test year.

(b) The FPFTY is based on the inflation rate.

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Docket No. R-2018-3000834
Advertising
Account Number 50675 & 90410

Exhibit No. CEH-2-R
Schedule -21
Adjustment No. 20
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Line No.	Description	12 Months Ended 12/31/2017	Future Test Year	Fully Projected Future Test Year
1	Advertising Expense	\$ 3,517	\$ 3,591.74 (a)	\$ 3,674 (b)
2				
3	Total Advertising Expense	<u>\$ 3,517</u>	<u>\$ 3,592</u>	<u>\$ 3,674</u>
4				
5	Adjustment		\$ 75	\$ 83
6				
7	<u>Inflation Rate:</u>			
8	Future Test Year	2.125%		
9	Fully Projected Future Test Year	2.300%		
10				
11	<u>Reference Notes:</u>			
12	(a) Based upon three year average with Future Test Year inflation rate.			
13	(b) Based upon Future Test Year cost with Fully Projected Future Test Year inflation rate.			

Line No.	Description	12 Months Ended 12/31/2017	Future Test Year	Fully Projected Future Test Year
1	Rate Case Expense Details:			
2	Legal Services			\$ 300,000
3	Customer Notifications, Transcripts & Misc.			15,000
4	Consulting Services:			
5	Rate of Return			30,000
6	Cost of Service			52,000
7	Depreciation Study/Revenue Requirement			170,000
8	Total Rate Case Expenses			<u>\$ 567,000</u>
9				
10	Current Amortization	<u>\$ 140,080</u>	<u>\$ 128,407</u>	
11	Amortize Rate Case Expenses Over 3 Years			<u>\$ 189,000</u>
12				
16	Total Regulatory Commission Expense	<u>\$ 140,080</u>	<u>\$ 128,407</u>	<u>\$ 189,000</u>
17				
18	Adjustment		\$ (11,674)	\$ 60,593

Line No.	Description	12 Months Ended 12/31/2017	Future Test Year	Fully Projected Future Test Year Under Present Rates 12/31/2019	Fully Projected Future Test Year Under Proposed Rates 12/31/2019
1	Regulatory Commission Expense:				
2	Regulatory Commission Expense	\$ 198,665	\$ 219,880	\$ 235,344	\$ 262,302
3					
4	Total Regulatory Commission Expense	<u>\$ 198,665</u>	<u>\$ 219,880</u>	<u>\$ 235,344</u>	<u>\$ 262,302</u>
5					
6	Adjustment		\$ 21,215	\$ 15,464	\$ 26,958
7					
8					
9					
10					
11		Per 2017			Fully Projected
12	Regulatory Commission Expense:	PAPUC	Future Test	Fully Projected	Future Test
13		Assesment	Year	Future Test Year	Year Under
14					Proposed Rates
15	Taxable Revenue	\$ 43,660,297	\$ 43,652,995	\$ 46,722,995	\$ 52,075,000
16	Amount Assessed	219,917	219,880	235,344	262,302
17					
18					

Line No.	Description	12 Months Ended 12/31/2017	Future Test Year	Fully Projected Future Test Year Under Present Rates 12/31/2019	Fully Projected Future Test Year Under Proposed Rates 12/31/2019
1	Bad Debt Expense	\$ 155,640	\$ 155,342	\$ 166,266	\$ 185,312
2					
3	Total Bad Debt Expense	\$ 155,640	\$ 155,342	\$ 166,266	\$ 185,312
4					
5	Adjustment		\$ (298)	\$ 10,925	\$ 19,045
6					
7					

	2017	2016	2015
Historic Uncollectable Expense	\$ 155,640	\$ 130,887	\$ 158,160
Historic Test Year Revenues	44,745,760	44,226,330	37,320,528
Effective Uncollectable Rate	0.348%	0.296%	0.424%
Average 3 Year Uncollectable Rate	0.356%		

	Future Test Year	Fully Projected Future Test Year Under Present Rates 12/31/2019	Fully Projected Future Test Year Under Proposed Rates 12/31/2019
Revenues	\$ 43,652,995	\$ 46,722,995	\$ 52,075,000
Uncollectable Expense	\$ 155,342	\$ 166,266	\$ 185,312

Line No.	GL A/C #	Categories	12 Months Ended 12/31/2017	Future Test Year	Fully Projected Future Test Year
1	70251	FICA Taxes	\$ 560,626 (a)	\$ 570,687	\$ 616,674
2	70252	Federal Unemployment Taxes		4,074	4,200
3	70253	State Unemployment Taxes		23,188	23,905
4	91460	Worker compensation	102,384	108,228	110,717
5	91500	Employee Pension Cost	1,425,022	1,409,589	1,442,010
6	91550	Post Retirement Health Care Accrued	(457,246)	(530,724)	(542,931)
7	91700	Employee Group Health & Life	1,323,689	1,336,815	1,425,129
8	91800	Employee 401K	201,925	\$ 237,668	\$ 250,253
9	91850	Other Employee Benefits	13,129	\$ 13,408	\$ 13,716
10	91860	Other Awards	2,837	2,898	2,964
11		Total Costs	\$ 3,172,367	\$ 3,175,830	\$ 3,346,637
12					
13		Account 90950/90953 (A/G)			
14					
15		Fringe Benefits Capitalized/Transferred Out/Other Accounts	\$ (1,059,720)	\$ (1,042,994)	\$ (1,099,090)
16					
17		Total Fringe Benefits Transferred	\$ (1,059,720)	\$ (1,042,994)	\$ (1,099,090)
18					
19					
20					
21		Net Transferred In/Out % (3 Yr Avg)	-32.84%		
22					
23		Inflation Rate:			
24		Future Test Year	2.125%		
25		Fully Projected Future Test Year	2.300%		
26					
27		Reference Notes:			
28		(a) Includes Federal and State Unemployment Taxes.			
29					

Line No.	Description	12 Months Ended 12/31/2017	Future Test Year	Fully Projected Future Test Year
1	Office Expense and Utilities	\$ 446,337	\$ 419,541 (a)	\$ 429,190 (b)
2				
3	PA - DEP Annual Fees			\$ 111,704 (c)
4				
5	Total Office Expense and Utilities	\$ 446,337	\$ 419,541	\$ 540,894
6				
7				
8				
9	<u>Year</u>	<u>Office Expense and Utilities</u>		
10	2015	\$ 445,512		
11	2016	340,584		
12	2017	446,337		
13	3 Year Average	\$ 410,811		
14				
15	Inflation Rate:			
16	Future Test Year		2.125%	
17	Fully Projected Future Test Year		2.300%	
18				
19	Reference Notes:			
20	(a) Based upon three year average with Future Test Year inflation rate.			
21	(b) Based upon Future Test Year cost with Fully Projected Future Test Year inflation rate.			
	(c) The PA - DEP is changing its fee structure based on population in 2019. In 2017, the Company paid \$1,795.83 to the PA-DEP for the Act 109 Permit Fee. The estimate will increase \$111,704.17 in 2019 based on the Company's service area population and the DEP's new fee structure.			

Line No.	Description	12 Months Ended 12/31/2017	Future Test Year	Fully Projected Future Test Year
1	Postage and Air Freight	\$ 354,308	\$ 358,563 (a)	\$ 366,358 (b)
2				
3	Total Postage and Air Freight	<u>\$ 354,308</u>	<u>\$ 358,563</u>	<u>\$ 366,358</u>
4				
5	Adjustment		\$ 4,256	\$ 7,795
6				
7	<u>Year</u>	<u>Services Expense</u>		
8	2015	\$ 352,593		
9	2016	345,903		
10	2017	354,308		
11				
12	3 Year Average	\$ 350,934		
13				
14	<u>Postage Rate:</u>			
15	2017	\$ 0.46		
16	2018	<u>0.47</u>		
17	Percent Change	<u>2.17%</u>		
18				
19	<u>Reference Notes:</u>			
20	(a) Based upon three year average with the 2017 to 2018 postage rate percentage change.			
21	(b) Based upon Future Test Year cost with the 2017 to 2018 postage rate percentage change.			

Line No.	Description	12 Months Ended 12/31/2017	Future Test Year	Fully Projected Future Test Year
1	Other O&M	\$ 143,806	\$ 199,353	\$ 203,938
2				
3	Total Other O&M	<u>\$ 143,806</u>	<u>\$ 199,353</u>	<u>\$ 203,938</u>
4				
5	Adjustment		\$ 55,547	\$ 4,585
6				
7				
8				
9				
10		Other O&M Expense		
11	<u>Year</u>			
12	2016	246,603		
13	2017	143,806		
14	2 Year Average	\$ 195,204		
15				
16	Inflation Rate:			
17	Future Test Year		2.13%	
18	Fully Projected Future Test Year		2.30%	
19				
20	Reference Notes:			
21	(a) Based upon two year average with Future Test Year inflation rate.			
22	(b) Based upon Future Test Year cost with Fully Projected Future Test Year inflation rate.			

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 Docket No. R-2018-3000834
 Mahoning Acquisition Adjustments
 Various Accounts

Exhibit No. CEH-2-R
 Schedule-29
 Adjustment No. 28
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Line No.	Description	12 Months Ended 12/31/2017	Future Test Year	Fully Projected Future Test Year
1	Purchased Water			\$ -
2				
3	Energy/Power			-
4				
5	Additional Subcontractor			-
6				
7	Total Mahoning Twp Acquisition Adjustments			\$ -

Line No.	Description			
1	Source: Blue Chip Financial Forecasts March 1, 2018			
2				
3	Consumer Price Index			
4				
5	Future Test Year:			
6		Annual		Quarter
7	1Q2018		3.10%	0.78%
8	2Q2018		-0.30%	-0.08%
9	3Q2018		2.00%	0.50%
10	4Q2018		3.70%	0.93%
11				
12	Inflation Adjustment:			<u>2.13%</u>
13				
14	Fully Projected Future Test Year:			
15		Annual		Quarter
16	1Q2019		2.30%	0.58%
17	2Q2019		2.30%	0.58%
18	3Q2019		2.30% (a)	0.58%
19	4Q2019		2.30% (a)	0.58%
20				
21	Inflation Adjustment:			<u>2.30%</u>
22				
23	Reference Notes:			
24	(a) Index not available, used 2Q of 2019 index.			

Line No.	Description	12 Months Ended 12/31/2017	Future Test Year	Fully Projected Future Test Year
1	Real Estate Taxes	\$ 270,553	\$ 311,025 (a)	\$ 318,178 (b)
2				
3	Total Real Estate Taxes	<u>\$ 270,553</u>	<u>\$ 311,025</u>	<u>\$ 318,178</u>
4				
5	Adjustment		\$ 40,472	\$ 7,154

Description	12 Months Ended 12/31/2017	Future Test Year	Fully Projected Future Test Year
PURTA	\$ 245,256	\$ 250,468	\$ 256,228
Less Refund	(34,000)	-	-
Property Tax	59,297	60,557	61,950
Total	\$ 270,553	\$ 311,025	\$ 318,178

Inflation Rate:

Future Test Year	2.13%
Fully Projected Future Test Year	2.30%

Reference Notes:

(a) Based upon historic test year (less refund), with Future Test Year inflation rate.

(b) Based upon Future Test Year cost with Fully Projected Future Test Year inflation rate.

	<u>2013</u>	<u>2014</u>
Realty Tax Equivalent	31,253,811	29,362,626
Total State Taxable Value	1,259,754,188	1,259,247,379
PURTA Millage Rate	32.4095	30.9176
Utility STV	8,809,262	9,008,241
Liability	285,504	278,513

Realty Tax Equivalent	-6.1%
Total State Taxable Value	0.0%
PURTA Millage Rate	-4.6%
Utility STV	2.3%
Liability	-2.4%

<u>2015</u>	<u>2016</u>
29,954,712	28,877,472
1,280,876,963	1,256,835,302
30.9861	30.5763
8,118,645	8,021,118
251,565	245,256
2.0%	-3.6%
1.7%	-1.9%
0.2%	-1.3%
-9.9%	-1.2%
-9.7%	-2.5%

Historical:

	<u>12-Months Ending 12/31/2017</u>	<u>Future Test Year</u>	<u>Fully Projected Future Test Year</u>		
Total Water	\$ 560,626	597,949	644,779		
Adjustment		\$ 37,323	\$ 46,830		
<u>Future Test Year</u>					
	<u>FICA</u>	<u>Medicare</u>	<u>FUI</u>	<u>SUI</u>	<u>Total</u>
Total Water	460,987	109,700	4,074	23,188	\$ 597,949
<u>FTY Tax Rates</u>	<u>FICA</u>	<u>Medicare</u>	<u>FUI</u>	<u>SUI</u>	
2018	6.20%	1.45%	0.600%	2.3905%	
<u>Fully Projected Future Test Year</u>					
	<u>FICA</u>	<u>Medicare</u>	<u>FUI</u>	<u>SUI</u>	<u>Total</u>
Total Water	499,788	116,886	4,200	23,905	\$ 644,779
<u>FPFTY Tax Rates</u>	<u>FICA</u>	<u>Medicare</u>	<u>FUI</u>	<u>SUI</u>	
2018	6.20%	1.45%	0.600%	2.3905%	

Reference Notes:

(a) See workpaper CEH-2.2

Historical:

	<u>12-Months Ending 12/31/2017</u>	<u>Future Test Year</u>	<u>Fully Projected Future Test Year</u>
Total Water	\$ 7,361,991	9,004,241	9,566,371
Depreciation on CIAC/Advances		(950,910)	(950,910)
	<u>\$ 7,361,991</u>	<u>\$ 8,053,332</u>	<u>\$ 8,615,462</u>
Adjustment		\$ 691,340	\$ 562,130
Adjustment Reg Liability due to TCJA		\$ (264,891)	\$ (264,891)

Reference Notes:

(a) See Exhibits No. JJS-2, and JJS-3

Line No.	Description	Dec-17 Federal Income Tax Current Rates	Dec-17 State Income Tax Current Rates	Dec-18 Federal Income Tax Current Rates	Dec-18 State Income Tax Current Rates	Dec-18 Total Income Taxes	Dec-19 Federal Income Tax Current Rates	Dec-19 State Income Tax Current Rates	Dec-19 Total Income Taxes	Dec-19 Federal Income Tax Proposed Rates	Dec-19 State Income Tax Proposed Rates	Dec-19 Total Income Taxes Proposed Rates
1	Operating Income Before Income Taxes	\$ 20,648,526	\$ 20,648,526	\$ 17,543,397	\$ 17,543,397		\$ 18,988,405	\$ 18,988,405		\$ 24,294,407	\$ 24,294,407	
2	Interest Expense (1)	4,485,685	4,485,685	4,325,686	4,325,686		5,065,736	5,065,736		5,065,736	5,065,736	
3	State Income Tax	1,289,182		1,217,505			1,140,177			1,670,247		
4	Repair Adjustment on 2018 Additions			1,177,273	1,177,273							
5	Repair Adjustment on 2019 Additions						2,222,921	2,222,921		2,222,921	2,222,921	
9	Excess Of Tax Depreciation Over Book	3,042,455	3,258,114	(45,332)	165,210		388,034	598,577		388,034	598,577	
10	Taxable Income	<u>\$ 11,831,205</u>	<u>\$ 12,904,728</u>	<u>\$ 10,868,265</u>	<u>\$ 11,875,227</u>		<u>\$ 10,171,537</u>	<u>\$ 11,101,172</u>		<u>\$ 14,947,469</u>	<u>\$ 16,407,173</u>	
11	Income Tax Rate	<u>35.00%</u>	<u>9.99%</u>	<u>21.00%</u>	<u>9.99%</u>		<u>21.00%</u>	<u>9.99%</u>		<u>21.00%</u>	<u>9.99%</u>	
12	Pro Forma Income Tax : Current	4,140,922	1,289,182	2,282,336	1,186,335		2,136,023	1,109,007		3,138,969	1,639,077	
13	CTA Adjustment											
14	Amortization of Flow through Taxes			38,123	31,170		38,123	31,170		38,123	31,170	
15	Amortization of Income Tax Credit											
16	Total - Current Income Taxes	<u>\$ 4,140,922</u>	<u>\$ 1,289,182</u>	<u>\$ 2,320,458</u>	<u>\$ 1,217,505</u>		<u>\$ 2,174,145</u>	<u>\$ 1,140,177</u>		<u>\$ 3,177,091</u>	<u>\$ 1,670,247</u>	
	Deferred Income Tax:											
17	Repair Adjustment			\$ 1,177,273			2,222,921			2,222,921		
18	Less: State Deduction (Fr. Sch.6-6)											
19	Income Tax Rate			21.00%			21.00%			21.00%		
20	Deferred Income Tax - Repair Adjustment			247,227			466,813			466,813		
21	Excess Of Tax Depreciation Over Book			\$ (45,332)			\$ 388,034			\$ 388,034	\$ -	
22	Less: State Deferred Income Tax			-			-			-	-	
23	Income Tax Rate			21.00%	9.99%		21.00%	9.99%		21.00%	9.99%	
24	Deferred Income Tax - Tax/Book Deprec.			(9,520)	-		81,487	-		81,487	-	
25	Total Deferred Income Tax (L20+L24)			237,707	-		548,301	-		548,301	-	
26	Total Income Taxes (L16+L25)	<u>\$ 4,140,922</u>	<u>\$ 1,289,182</u>	<u>\$ 2,558,166</u>	<u>\$ 1,217,505</u>	<u>\$ 3,775,671</u>	<u>\$ 2,722,446</u>	<u>\$ 1,140,177</u>	<u>\$ 3,862,623</u>	<u>\$ 3,725,392</u>	<u>\$ 1,670,247</u>	<u>\$ 5,395,638</u>
	Adjustment											
27	Rate Base	\$ 190,763,193	\$ 190,763,193	\$ 203,023,803	\$ 203,023,803		\$ 237,757,639	\$ 237,757,639		\$ 237,757,639	\$ 237,757,639	
28	Weighted Cost Of Debt	2.13%	2.13%	2.13%	2.13%		2.13%	2.13%		2.13%	2.13%	
29	Interest Expense (1)	<u>\$ 4,064,458</u>	<u>\$ 4,064,458</u>	<u>\$ 4,325,686</u>	<u>\$ 4,325,686</u>		<u>\$ 5,065,736</u>	<u>\$ 5,065,736</u>		<u>\$ 5,065,736</u>	<u>\$ 5,065,736</u>	

Line #	Employee ID #	Job Title	Office Location	Bargaining Exempt/Non-Exempt	Department	Hourly Rate	Annual Amount	Salary Increase	Incentive /STIP %	Incentive/STIP Amt	Overtime	Standby	Shift	Substitution	Total
60	Non-Exempt/Exempt						2080	3.00%							
61	0000000986	Superintendent	PA Bloomsburg	Exempt	Administration - General	\$ 42.01	\$ 87,376	\$ 2,621	10%	\$ 9,000					\$ 98,997
62	00001178714	Manager Water Quality	PA Harrisburg	Exempt	Administration - General	42.07	87,500	2,625	15%	13,519					103,644
63	00001178683	NRW Specialist	PA Harrisburg	Exempt	Administration - General	26.10	54,281	1,628	5%	2,795					58,705
64	00001173794	Water Quality Specialist	PA Harrisburg	Exempt	Administration - General	31.73	65,992	1,980	5%	3,399					71,370
65	00001177800	Data & Asset Mgmt Specialist	PA Harrisburg	Exempt	Administration - General	32.09	66,755	2,003	5%	3,438					72,196
66	00000009868	General Manager	PA Harrisburg	Exempt	Administration - General	96.76	201,254	6,038	40%	82,917					290,208
67	00001175835	Director Operations	PA Harrisburg	Exempt	Administration - General	67.83	141,081	4,232	20%	29,063					174,376
68	00001173315	Administrative Coordinator	PA Harrisburg	Exempt	Administration - General	32.98	68,590	2,058	5%	3,532					74,180
69	00001173428	Senior Engineer	PA Harrisburg	Exempt	Administration - General	51.57	107,262	3,218	15%	16,572					127,052
70	00001177671	Manager Env Health & Safety	PA Harrisburg	Exempt	Administration - General	43.86	91,228	2,737	15%	14,095					108,060
71	00001173659	Water Quality Specialist	PA Dallas	Exempt	Administration - General	33.31	69,294	2,079	5%	3,569					74,941
72	00001172860	Public Affairs Mgr	PA Harrisburg	Exempt	Communications	47.37	98,524	2,956	15%	15,222					116,702
73	00001178243	Supervisor Customer Service	PA Harrisburg	Exempt	Customer Service Office	36.06	75,000	2,250	5%	3,863					81,113
74	00001178511	Manager Customer Service	PA Harrisburg	Exempt	Customer Service Office	48.66	101,216	3,036	15%	15,638					119,890
75	00001176088	GIS Lead	PA Harrisburg	Exempt	Engineering	28.17	58,602	1,758	5%	3,018					63,378
76	00001178284	Project Manager Engineering	PA Harrisburg	Exempt	Engineering	36.06	75,000	2,250	5%	3,863					81,113
77	00001170362	Manager Engineering	PA Harrisburg	Exempt	Engineering	51.74	107,623	3,229	15%	16,628					127,479
78	00001178568	Engineer	PA Harrisburg	Exempt	Engineering	32.21	67,000	2,010	5%	3,450					72,460
79	00001178748	Construction Coordinator	PA Harrisburg	Exempt	Engineering	35.10	73,008	2,190	5%	3,760					78,958
80	00001178494	Financial Analyst	PA Harrisburg	Exempt	Financial Planning	30.29	63,000	1,890	5%	3,245					68,135
81	00001178271	Data Analyst	PA Harrisburg	Exempt	Financial Planning	24.04	50,000	1,500	5%	2,575					54,075
82	00001173787	Director Finance	PA Harrisburg	Exempt	Financial Planning	55.21	114,845	3,445	20%	23,658					141,948
83	00001174828	Assistant Manager Operations	PA Harrisburg	Exempt	Production	39.12	81,379	2,441	10%	8,382					92,202
84	00001175056	Superintendent Production	PA Harrisburg	Exempt	Production	44.26	92,059	2,762	10%	9,482					104,303
85	00001173102	Automated System Spec	PA Harrisburg	Exempt	Production	41.13	85,540	2,566	10%	8,811					96,917
86	00001176485	Assistant Supervisor Prod/T&D	PA Bloomsburg	Exempt	Production	33.65	70,000	2,100	3%	2,163					74,263
87	00000001017	Superintendent Production	PA Bloomsburg	Exempt	Production	36.32	75,553	2,267	5%	3,891					81,711
88	00001176419	Superintendent T&D	PA Harrisburg	Exempt	System Maint Distribution	41.76	86,859	2,606	10%	8,946					98,411
89	00000009833	Non-Revenue Water Technician	PA Harrisburg	Non-exempt	Administration - General	32.77	68,162	2,045	3%	2,106	8,829				81,141
90	00001175840	Admin Asst	PA Harrisburg	Non-exempt	Engineering	24.60	51,168	1,535	3%	1,581	5,187				59,471
91	00001173427	Accounting Rep	PA Harrisburg	Non-exempt	Financial Planning	25.41	52,853	1,586	3%	1,633	5,336				61,407
92	00000009867	Lead Operator	PA Mechanicsburg	Non-exempt	Production	35.76	74,381	2,231	3%	2,298	6,289				85,199
93	00001172484	Office Asst (Part Time)	PA Harrisburg	Non-exempt	Production	19.56	40,885	1,119	3%	1,254	3,440				46,498
94	00000009855	Operator	PA Mechanicsburg	Non-exempt	Production	32.10	66,768	2,003	3%	2,063	5,645				76,479
95	00000009873	Operator	PA Mechanicsburg	Non-exempt	Production	32.10	66,768	2,003	3%	2,063	5,645				76,479
96	00001173628	Utility Person	PA Mechanicsburg	Non-exempt	System Maint Distribution	22.40	46,592	1,398	3%	1,440	4,342				53,772
97	00001178343	Utility Person	PA Mechanicsburg	Non-exempt	System Maint Distribution	29.46	61,277	1,838	3%	1,893	5,711				70,720
98	00001175781	Utility Person	PA Mechanicsburg	Non-exempt	System Maint Distribution	29.46	61,277	1,838	3%	1,893	5,711				70,720
99	00001175433	Utility Person	PA Mechanicsburg	Non-exempt	System Maint Distribution	29.46	61,277	1,838	3%	1,893	5,711				70,720
100	00000009831	Utility Person	PA Mechanicsburg	Non-exempt	System Maint Distribution	29.46	61,277	1,838	3%	1,893	5,711				70,720
101	00001172493	Office Asst	PA Harrisburg	Non-exempt	System Maint Distribution	21.24	44,179	1,325	3%	1,365	4,117				50,987
102	00001174804	Foreperson	PA Harrisburg	Non-exempt	System Maint Distribution	34.28	71,302	2,139	3%	2,203	6,645				82,290
103	00001175450	Field Services Tech	PA Dallas	Non-exempt	System Maint Distribution/Meter	24.43	50,814	1,524	3%	1,570	7,233				61,142
104	00001172919	Field Services Tech	PA Dallas	Non-exempt	System Maint Distribution/Meter	27.27	56,722	1,702	3%	1,753	8,074				68,249
105	00001178112	Field Services Tech	PA Dallas	Non-exempt	System Maint Distribution/Meter	24.21	50,357	1,511	3%	1,556	7,168				60,991
106	00000001014	Foreperson	PA Dallas	Non-exempt	System Maint Distribution	34.82	72,426	2,173	3%	2,238	6,750				83,586
107		Subtotal					3,474,104	104,121		351,189	107,543				4,036,957
108															
109	Vacancies:	None													
110		Subtotal													
111															
112	Projected New Hires:														
113	start 1/1/2019	Admin Assistant Bloom (Part Time)	PA Bloomsburg	Non-exempt	Admin Gen										
114	start 1/1/2019	Supervisor T&D	PA Harrisburg	Exempt	SystMaintConst										
115	start 1/1/2019	Supervisor Prod	PA Harrisburg	Exempt	Production										
116		Subtotal													
117															
118		Total Exempt/Non-Exempt					3,474,104	104,121		351,189	107,543				4,036,957
119															
120		Subtotal Bargaining/Exempt/Non-Exempt					6,504,373	187,454		397,893	401,432	76,394	15,228	4,605	7,587,378
121															
122		Labor Capitalized @				-32.84%									(2,491,818)
123															
124		Total Payroll - Future Test Year					6,504,373	187,454		397,893	401,432	76,394	15,228	4,605	5,095,561

SUEZ WATER PENNSYLVANIA
 LABOR EXPENSE FOR FULLY PROJECTED FUTURE TEST YEAR ENDED DECEMBER 31, 2019

Line #	Employee ID #	Job Title	Office Location	Bargaining Exempt/Non-Exempt	Department	Hourly Rate	Annual Amount	Salary Increase	Incentive/Incentive/STIP		Overtime	Standby	Shift	Substitutor	Total
									STIP %	Amt					
1	Bargaining						2080	2.75%							
2	0000001005	Field Service Representative	PA Harrisburg	Bargaining	Customer Service Field/Meter	\$ 26.85	\$ 55,845	\$ 1,536	1.5%	\$ 861	\$ 4,942	\$ 1,349	\$ 31	\$ 322	\$ 64,886
3	00001177634	Field Service Representative	PA Harrisburg	Bargaining	Customer Service Field/Meter	24.16	50,246	1,382	1.5%	774	4,447	1,214	28	290	58,380
4	00001178403	Field Service Representative	PA Harrisburg	Bargaining	Customer Service Field/Meter	21.47	44,667	1,228	1.5%	688	3,953	1,079	25	258	51,899
5	00001176599	Field Service Representative	PA Harrisburg	Bargaining	Customer Service Field/Meter	26.85	55,845	1,536	1.5%	861	4,942	1,349	31	322	64,886
6	00001175239	Customer Serv Rep Office-Harr	PA Harrisburg	Bargaining	Customer Service Office	24.70	51,378	1,413	1.5%	792	7,368				60,951
7	00001178480	Customer Serv Rep Office-Harr	PA Harrisburg	Bargaining	Customer Service Office	19.76	41,098	1,130	1.5%	633	5,894				48,756
8	00001176579	Customer Serv Rep Office-Harr	PA Harrisburg	Bargaining	Customer Service Office	24.70	51,378	1,413	1.5%	792	7,368				60,951
9	00001177782	Customer Serv Rep Office-Harr	PA Harrisburg	Bargaining	Customer Service Office	24.70	51,378	1,413	1.5%	792	7,368				60,951
10	00001178715	Customer Serv Rep Office-Harr	PA Harrisburg	Bargaining	Customer Service Office	19.76	41,098	1,130	1.5%	633	5,894				48,756
11	00001173185	Customer Serv Rep Office-Harr	PA Harrisburg	Bargaining	Customer Service Office	24.70	51,378	1,413	1.5%	792	7,368				60,951
12	00001177669	Customer Serv Rep Office-Harr	PA Harrisburg	Bargaining	Customer Service Office	24.70	51,378	1,413	1.5%	792	7,368				60,951
13	00001175887	Customer Serv Rep Office-Harr	PA Harrisburg	Bargaining	Customer Service Office	24.70	51,378	1,413	1.5%	792	7,368				60,951
14	00000003025	Customer Serv Rep Office-Harr	PA Harrisburg	Bargaining	Customer Service Office	24.70	51,378	1,413	1.5%	792	7,368				60,951
15	00000000917	Maintenance Technician	PA Harrisburg	Bargaining	Maintenance	33.48	69,630	1,915	1.5%	1,073	4,364			30	77,013
16	00000000915	Maintenance Technician	PA Harrisburg	Bargaining	Maintenance	33.48	69,630	1,915	1.5%	1,073	4,364			30	77,013
17	00000001239	Maintenance Technician	PA Harrisburg	Bargaining	Maintenance	33.48	69,630	1,915	1.5%	1,073	4,364			30	77,013
18	00001170134	Electrician	PA Harrisburg	Bargaining	Maintenance	34.92	72,643	1,998	1.5%	1,120	4,553			31	80,346
19	start 1/1/2019	Electrician/SCADA	PA Bloomsburg	Bargaining	Maintenance	31.50	65,520	1,802	1.5%	1,010	4,107			28	72,467
20	00000001028	Maintenance Technician	PA Harrisburg	Bargaining	Production	33.48	69,630	1,915	1.5%	1,073	5,899	773		1,028	80,318
21	00001177000	Relief Operator-Harrisburg	PA Harrisburg	Bargaining	Production	31.63	65,783	1,809	1.5%	1,014	5,573	730		971	75,880
22	00001172861	Relief Operator-Harrisburg	PA Harrisburg	Bargaining	Production	33.19	68,903	1,895	1.5%	1,062	5,837	765		1,017	79,480
23	00000000939	Plant Operator-Harrisburg	PA Harrisburg	Bargaining	Production	32.65	67,920	1,868	1.5%	1,047	5,754	754		1,008	78,346
24	00000001027	Plant Operator-Bloomsburg	PA Bloomsburg	Bargaining	Production	30.65	63,753	1,753	1.5%	983	5,401	708		941	73,538
25	00001172607	Plant Operator-Harrisburg	PA Harrisburg	Bargaining	Production	32.65	67,920	1,868	1.5%	1,047	5,754	754		1,003	78,346
26	00001173622	Plant Operator-Bloomsburg	PA Bloomsburg	Bargaining	Production	31.68	65,890	1,812	1.5%	1,016	5,582	732		973	76,004
27	00001173364	Plant Operator-Bloomsburg	PA Bloomsburg	Bargaining	Production	31.68	65,890	1,812	1.5%	1,016	5,582	732		973	76,004
28	00000000941	Plant Operator-Harrisburg	PA Harrisburg	Bargaining	Production	32.65	67,920	1,868	1.5%	1,047	5,754	754		1,003	78,346
29	00001174842	Plant Operator-Bloomsburg	PA Bloomsburg	Bargaining	Production	31.68	65,890	1,812	1.5%	1,016	5,582	732		973	76,004
30	00000001233	Plant Operator-Harrisburg	PA Harrisburg	Bargaining	Production	32.65	67,920	1,868	1.5%	1,047	5,754	754		1,003	78,346
31	00001172936	Plant Operator-Harrisburg	PA Harrisburg	Bargaining	Production	32.65	67,920	1,868	1.5%	1,047	5,754	754		1,003	78,346
32	00000000925	Plant Operator-Harrisburg	PA Harrisburg	Bargaining	Production	32.65	67,920	1,868	1.5%	1,047	5,754	754		1,003	78,346
33	00000002925	Crew Chief-Bloomsburg	PA Bloomsburg	Bargaining	System Maint Distribution	31.60	65,719	1,807	1.5%	1,013	6,135	3,172		125	78,133
34	00000001029	Utility A Person -Bloomsburg	PA Bloomsburg	Bargaining	System Maint Distribution	30.28	62,983	1,732	1.5%	971	5,880	3,040		120	74,881
35	00001172842	Utility A Person -Bloomsburg	PA Bloomsburg	Bargaining	System Maint Distribution	30.28	62,983	1,732	1.5%	971	5,880	3,040		120	74,881
36	00000001035	Utility B Person -Bloomsburg	PA Bloomsburg	Bargaining	System Maint Distribution	26.62	55,375	1,523	1.5%	853	5,169	2,673		105	65,835
37	00000000972	Equipment Operator-Harrisburg	PA Harrisburg	Bargaining	System Maint Distribution	34.42	71,596	1,969	1.5%	1,103	6,684	3,456		136	85,121
38	00001170305	Utility Worker-Harrisburg	PA Harrisburg	Bargaining	System Maint Distribution	30.76	63,988	1,760	1.5%	986	5,973	3,088		122	76,075
39	00000001073	Utility Worker-Harrisburg	PA Harrisburg	Bargaining	System Maint Distribution	30.76	63,988	1,760	1.5%	986	5,973	3,088		122	76,075
40	00001172732	Utility Worker-Harrisburg	PA Harrisburg	Bargaining	System Maint Distribution	30.76	63,988	1,760	1.5%	986	5,973	3,088		122	76,075
41	00001170352	Utility Worker-Harrisburg	PA Harrisburg	Bargaining	System Maint Distribution	30.76	63,988	1,760	1.5%	986	5,973	3,088		122	76,075
42	00000000499	Equipment Operator-Harrisburg	PA Harrisburg	Bargaining	System Maint Distribution	34.42	71,596	1,969	1.5%	1,103	6,684	3,456		136	85,121
43	00001172001	Utility Worker-Harrisburg	PA Harrisburg	Bargaining	System Maint Distribution	30.76	63,988	1,760	1.5%	986	5,973	3,088		122	76,075
44	00001178622	Utility Worker-Harrisburg	PA Harrisburg	Bargaining	System Maint Distribution	30.76	63,988	1,760	1.5%	986	5,973	3,088		122	76,075
45	00001172012	Utility Worker-Harrisburg	PA Harrisburg	Bargaining	System Maint Distribution	30.76	63,988	1,760	1.5%	986	5,973	3,088		122	76,075
46	00000001015	Leader-Harrisburg	PA Harrisburg	Bargaining	System Maint Distribution	35.59	74,033	2,036	1.5%	1,141	6,911	3,573		141	88,018
47	00000001164	Leader-Harrisburg	PA Harrisburg	Bargaining	System Maint Distribution	35.59	74,033	2,036	1.5%	1,141	6,911	3,573		141	88,018
48	00000000980	Field Service Representative	PA Harrisburg	Bargaining	System Maint Distribution/Meter	27.95	58,132	1,599	1.5%	896	4,287	3,559		143	73,075
49	00001172754	Utility Worker-Harrisburg	PA Harrisburg	Bargaining	System Maint Distribution	30.76	63,988	1,760	1.5%	986	5,973	3,088		122	76,075
50	00001176303	Utility Worker-Harrisburg	PA Harrisburg	Bargaining	System Maint Distribution	30.76	63,988	1,760	1.5%	986	5,973	3,088		122	76,075
51	00000000924	Utility Worker-Harrisburg	PA Harrisburg	Bargaining	System Maint Distribution	30.76	63,988	1,760	1.5%	986	5,973	3,088		122	76,075
52	00000001467	Leader-Harrisburg	PA Harrisburg	Bargaining	System Maint Distribution	35.59	74,033	2,036	1.5%	1,141	6,911	3,573		141	88,018
53	start 1/1/2019	Utility B Person	PA Bloomsburg	Bargaining	System Maint Distribution										
54		Subtotal					3,179,121	87,426		48,998	302,560	78,686	15,685	4,743	3,717,219
55															
56	Vacancies:	None													
57		Subtotal													
58															
59	Projected New Hires:	None													
60		Subtotal													
		Total Bargaining					3,179,121	87,426		48,998	302,560	78,686	15,685	4,743	3,717,219

Line #	Employee ID #	Job Title	Office Location	Bargaining Exempt/Non-Exempt	Department	Hourly Rate	Annual Amount	Salary Increase	Incentive/STIP %	Incentive/STIP Amt	Overtime	Standby	Shift	Substitutor	Total
60	Non-Exempt/Exempt						2080	3.00%							
61	0000000886	Superintendent	PA Bloomsburg	Exempt	Administration - General	\$ 43.27	\$ 89,997	\$ 2,700	10%	\$ 9,270					\$ 101,967
62	00001178714	Manager Water Quality	PA Harrisburg	Exempt	Administration - General	43.33	90,125	2,704	15%	13,924					106,753
63	00001178983	NRW Specialist	PA Harrisburg	Exempt	Administration - General	26.88	55,909	1,677	5%	2,879					60,466
64	00001173794	Water Quality Specialist	PA Harrisburg	Exempt	Administration - General	32.68	67,972	2,039	5%	3,501					73,511
65	00001177800	Data & Asset Mgmt Specialist	PA Harrisburg	Exempt	Administration - General	33.06	68,758	2,063	5%	3,541					74,362
66	00000008966	General Manager	PA Harrisburg	Exempt	Administration - General	99.66	207,292	6,219	40%	85,404					298,914
67	00001175835	Director Operations	PA Harrisburg	Exempt	Administration - General	69.86	145,313	4,359	20%	29,935					179,607
68	00001173315	Administrative Coordinator	PA Harrisburg	Exempt	Administration - General	33.97	70,648	2,119	5%	3,638					76,406
69	00001173428	Senior Engineer	PA Harrisburg	Exempt	Administration - General	53.12	110,480	3,314	15%	17,069					130,863
70	00001177671	Manager Env Health & Safety	PA Harrisburg	Exempt	Administration - General	45.18	93,965	2,819	15%	14,518					111,301
71	00001173659	Water Quality Specialist	PA Dallas	Exempt	Administration - General	34.31	71,373	2,141	5%	3,676					77,190
72	00001172860	Public Affairs Mgr	PA Harrisburg	Exempt	Communications	48.79	101,480	3,044	15%	15,679					120,203
73	00001178243	Supervisor Customer Service	PA Harrisburg	Exempt	Customer Service Office	37.14	77,250	2,318	5%	3,978					83,546
74	00001178511	Manager Customer Service	PA Harrisburg	Exempt	Customer Service Office	50.12	104,252	3,128	15%	16,107					123,487
75	00001176098	GIS Lead	PA Harrisburg	Exempt	Engineering	29.02	60,360	1,811	5%	3,109					65,279
76	00001178264	Project Manager Engineering	PA Harrisburg	Exempt	Engineering	37.14	77,250	2,318	5%	3,978					83,546
77	00001170362	Manager Engineering	PA Harrisburg	Exempt	Engineering	53.29	110,852	3,326	15%	17,127					131,304
78	00001178568	Engineer	PA Harrisburg	Exempt	Engineering	33.18	69,010	2,070	5%	3,554					74,634
79	00001178748	Construction Coordinator	PA Harrisburg	Exempt	Engineering	36.15	75,198	2,256	5%	3,873					81,327
80	00001178494	Financial Analyst	PA Harrisburg	Exempt	Financial Planning	31.20	64,890	1,947	5%	3,342					70,179
81	00001178271	Data Analyst	PA Harrisburg	Exempt	Financial Planning	24.76	51,500	1,545	5%	2,652					55,697
82	00001173787	Director Finance	PA Harrisburg	Exempt	Financial Planning	56.87	118,290	3,549	20%	24,368					146,207
83	00001174828	Assistant Manager Operations	PA Harrisburg	Exempt	Production	40.30	83,820	2,515	10%	8,633					94,968
84	00001175056	Superintendent Production	PA Harrisburg	Exempt	Production	45.59	94,821	2,845	10%	9,767					107,432
85	00001173102	Automated System Spec	PA Harrisburg	Exempt	Production	42.36	88,106	2,643	10%	9,075					99,824
86	00001178485	Assistant Supervisor Prod/T&D	PA Bloomsburg	Exempt	Production	34.66	72,100	2,163	3%	2,228					76,491
87	0000000197	Superintendent Production	PA Bloomsburg	Exempt	Production	37.41	77,820	2,335	5%	4,008					84,162
88	start 1/1/2019	Supervisor Prod	PA Harrisburg	Exempt	Production	36.05	74,984	2,250	5%	3,749					80,983
89	00001178419	Superintendent T&D	PA Harrisburg	Exempt	System Maint Distribution	43.01	89,465	2,684	10%	9,215					101,364
90	start 1/1/2019	Supervisor T&D	PA Harrisburg	Exempt	System Maint Distribution	38.46	79,997	2,400	5%	4,000					86,397
91	00000008933	Non-Revenue Water Technician	PA Harrisburg	Non-exempt	Administration - General	33.75	70,206	2,106	3%	2,169	6,708				81,188
92	start 1/1/2019	Admin Assistant Bloom (Part Time)	PA Bloomsburg	Non-exempt	Administration - General	24.03	24,991	687	3%	750	2,987				28,815
93	00001175840	Admin Asst	PA Harrisburg	Non-exempt	Engineering	25.34	52,709	1,581	3%	1,629	5,342				61,255
94	00001173427	Accounting Rep	PA Harrisburg	Non-exempt	Financial Planning	26.17	54,438	1,633	3%	1,682	5,496				63,250
95	00000008967	Lead Operator	PA Mechanicsburg	Non-exempt	Production	36.83	76,612	2,298	3%	2,367	6,490				87,768
96	00001172494	Office Asst (Part Time)	PA Harrisburg	Non-exempt	Production	20.10	41,804	1,150	3%	1,289	3,541				47,783
97	00000008955	Operator	PA Mechanicsburg	Non-exempt	Production	33.06	68,771	2,063	3%	2,125	5,826				78,785
98	00000008973	Operator	PA Mechanicsburg	Non-exempt	Production	33.06	68,771	2,063	3%	2,125	5,826				78,785
99	00001173828	Utility Person	PA Mechanicsburg	Non-exempt	System Maint Distribution	23.07	47,990	1,440	3%	1,483	4,480				55,392
100	00001178343	Utility Person	PA Mechanicsburg	Non-exempt	System Maint Distribution	30.34	63,115	1,899	3%	1,950	5,892				72,851
101	00001178781	Utility Person	PA Mechanicsburg	Non-exempt	System Maint Distribution	30.34	63,115	1,899	3%	1,950	5,892				72,851
102	00001175433	Utility Person	PA Mechanicsburg	Non-exempt	System Maint Distribution	30.34	63,115	1,899	3%	1,950	5,892				72,851
103	00000008931	Utility Person	PA Mechanicsburg	Non-exempt	System Maint Distribution	30.34	63,115	1,899	3%	1,950	5,892				72,851
104	00001172483	Office Asst	PA Harrisburg	Non-exempt	System Maint Distribution	21.88	45,505	1,365	3%	1,406	4,248				52,524
105	00001174804	Foreperson	PA Harrisburg	Non-exempt	System Maint Distribution	35.31	73,441	2,203	3%	2,269	6,856				84,770
106	00001175450	Field Services Tech	PA Dallas	Non-exempt	System Maint Distribution/Meter	25.16	52,339	1,570	3%	1,617	7,461				62,988
107	00001172819	Field Services Tech	PA Dallas	Non-exempt	System Maint Distribution/Meter	28.09	58,423	1,753	3%	1,805	8,329				70,310
108	00001178112	Field Services Tech	PA Dallas	Non-exempt	System Maint Distribution/Meter	24.94	51,868	1,556	3%	1,603	7,394				62,421
109	00000001014	Foreperson	PA Dallas	Non-exempt	System Maint Distribution	35.86	74,598	2,238	3%	2,305	6,564				86,105
110		Subtotal					3,758,197	112,579		370,220	110,915				4,351,911
111															
112	Vacancies:	None													
113		Subtotal													
114															
115	Projected New Hires:	None													
116		Subtotal													
117															
118		Total Exempt/Non-Exempt					3,758,197	112,579		370,220	110,915				4,351,911
119															
120		Subtotal Bargaining/Exempt/Non-Exempt					6,937,319	200,005		419,219	413,475	78,686	15,685	4,743	8,069,130
121															
122		Lebor Capitalized @				-32.84%									(2,650,033)
123															
124		Total Payroll - Future Test Year					6,937,319	200,005		419,219	413,475	78,686	15,685	4,743	5,419,097

SUEZ WATER PENNSYLVANIA
EMPLOYEE PAYROLL FOR FUTURE TEST YEAR ENDED DECEMBER 31, 2018

	Calendar Year 12/31/2015	Calendar Year 12/31/2016	Calendar Year 12/31/2017	Future Test Year 3 Yr. Avg.
Overtime Expense				
Overtime (\$)	\$ 417,672	\$ 398,920	\$ 352,627	\$ 389,739
Department:				
Administration - General	13,367	9,185	5,023	9,192
Capital Management	4,878	4,158	3,696	4,244
Customer Service Field	4,503	13,053	1,925	6,494
Customer Service Office	34,285	49,301	51,379	44,988
Financial Planning	6,038	3,544	3,458	4,347
Maintenance	21,781	24,031	22,535	22,782
Meter Field	14,786	21,579	8,962	15,109
Meter Reading	7,692	-	-	2,564
Production	91,607	110,963	92,289	98,286
System Maint Distribution	218,735	163,105	163,360	181,733
Overtime (\$)	9,701	9,298	7,897	8,965
Department:				
Administration - General	293.00	195.00	103.50	197.17
Capital Management	131.00	115.50	101.00	115.83
Customer Service Field	132.50	339.50	56.00	176.00
Customer Service Office	1,022.00	1,576.70	1,522.75	1,373.82
Financial Planning	169.25	96.75	91.50	119.17
Maintenance	468.00	499.00	448.00	471.67
Meter Field	400.00	543.50	220.00	387.83
Meter Reading	204.50	-	-	68.17
Production	1,997.00	2,332.00	1,893.50	2,074.17
System Maint Distribution	4,883.25	3,599.75	3,461.00	3,981.33
3 Year Avg Overtime Hourly Rate (Historical - 2015,2016,2017)				\$ 43.47
FTY Overtime Hourly Rate @ 3% Increase to Historical Overtime Rate				\$ 44.78
FTY Overtime \$ By Department				\$ 401,432
Department:				
Administration - General				8,829
Capital Management				5,187
Customer Service Field				7,881
Customer Service Office				61,515
Financial Planning				5,336
Maintenance				21,120
Meter Field				17,366
Meter Reading				3,052
Production				92,875
System Maint Distribution				178,272

SUEZ WATER PENNSYLVANIA
EMPLOYEE PAYROLL FOR FUTURE TEST YEAR ENDED DECEMBER 31, 2018

	Calendar Year 12/31/2015	Calendar Year 12/31/2016	Calendar Year 12/31/2017	Future Test Year 3 Yr. Avg.
Standby Expense				
Standby (\$)	\$ 65,700	\$ 68,874	\$ 87,933	\$ 74,169
Department:				
Customer Service Field	677	5,093	-	1,923
Meter Field	2,054	2,948	752	1,918
Meter Reading	3,029	-	-	1,010
Production	4,782	3,958	19,638	9,459
System Maint Distribution	55,158	56,875	67,543	59,859
Standby (Hours)	2,450	2,502	3,007	2,653
Department:				
Customer Service Field	27.50	206.50	-	78.00
Meter Field	83.50	113.50	28.00	75.00
Meter Reading	122.00	-	-	40.67
Production	184.50	147.00	649.00	326.83
System Maint Distribution	2,032.00	2,035.00	2,329.50	2,132.17
3 Year Avg Standby Hourly Rate (Historical - 2015,2016,2017)				\$ 27.96
FTY Standby Hourly Rate @ 3% Increase to Historical Standby Rate				\$ 28.80
FTY Standby \$ By Department				\$ 76,394
Department:				
Customer Service Field				2,246
Meter Field				2,160
Meter Reading				1,171
Production				9,412
System Maint Distribution				61,404

	Calendar Year 12/31/2015	Calendar Year 12/31/2016	Calendar Year 12/31/2017	Future Test Year 3 Yr. Avg.
Shift Expense				
Shift (\$)	\$ 24,459	\$ 19,640	\$ 254	\$ 14,784
Department:				
Maintenance	71	100	254	142
Meter Reading	414	-	-	138
Production	18,516	17,946	-	12,154
System Maint Distribution	5,458	1,593	-	2,350
FTY Shift Hourly Rate @ 3% Increase to Historical Shift Rate				\$ 15,228
FTY Shift \$ By Department				
Department:				
Maintenance				146
Meter Reading				142
Production				12,519
System Maint Distribution				2,421

SUEZ WATER PENNSYLVANIA
EMPLOYEE PAYROLL FOR FUTURE TEST YEAR ENDED DECEMBER 31, 2018

	Calendar Year 12/31/2015	Calendar Year 12/31/2016	Calendar Year 12/31/2017	Future Test Year 3 Yr. Avg.
Substitution Expense				
Substitution (\$)	\$ 5,613	\$ 3,511	\$ 4,290	\$ 4,471
Department:				
Customer Service Field	173	-	-	58
Meter Field	2,299	1,763	-	1,354
System Maint Distribution	3,141	1,748	4,290	3,060
Substitution (Hours)	116	69	84	90
Department:				
Customer Service Field	4.00	-	-	1.33
Meter Field	48.50	33.00	-	27.17
System Maint Distribution	63.50	36.00	84.00	61.17
3 Year Avg Overtime Hourly Rate (Historical - 2015,2016,2017)				\$ 49.86
FTY Substitution Hourly Rate @ 3% Increase to Historical Substitution Rate				\$ 51.36
FTY Substitution \$ By Department				\$ 4,605
Department:				
Customer Service Field				\$ 68
Meter Field				\$ 1,395
System Maint Distribution				\$ 3,142

SUEZ WATER PENNSYLVANIA
EMPLOYEE PAYROLL FOR FULLY PROJECTED FUTURE TEST YEAR ENDED DECEMBER 31, 2019

	Calendar Year 12/31/2015	Calendar Year 12/31/2016	Calendar Year 12/31/2017	Future Test Year 3 Yr. Avg.	Fully Projected Future Test Year 3 Yr. Avg.
Overtime Expense					
Overtime (\$)	\$ 417,672	\$ 398,920	\$ 352,627	\$ 389,739	
Department:					
Administration - General	13,367	9,185	5,023	9,192	
Capital Management	4,878	4,158	3,696	4,244	
Customer Service Field	4,503	13,053	1,925	6,494	
Customer Service Office	34,285	49,301	51,379	44,988	
Financial Planning	6,038	3,544	3,458	4,347	
Maintenance	21,781	24,031	22,535	22,782	
Meter Field	14,786	21,579	8,962	15,109	
Meter Reading	7,692	-	-	2,564	
Production	91,607	110,963	92,289	98,286	
System Maint Distribution	218,735	163,105	163,360	181,733	
Overtime (Hours)	9,701	9,298	7,897	8,965	8,965
Department:					
Administration - General	293.00	195.00	103.50	197.17	197.17
Capital Management	131.00	115.50	101.00	115.83	115.83
Customer Service Field	132.50	339.50	56.00	176.00	176.00
Customer Service Office	1,022.00	1,576.70	1,522.75	1,373.82	1,373.82
Financial Planning	169.25	96.75	91.50	119.17	119.17
Maintenance	468.00	499.00	448.00	471.67	471.67
Meter Field	400.00	543.50	220.00	387.83	387.83
Meter Reading	204.50	-	-	68.17	68.17
Production	1,997.00	2,332.00	1,893.50	2,074.17	2,074.17
System Maint Distribution	4,883.25	3,599.75	3,461.00	3,981.33	3,981.33
				FTY	FPFTY
3 Year Avg Overtime Hourly Rate (Historical - 2015,2016,2017)				\$ 43.47	
FPFTY Overtime Hourly Rate @ 3% Increase to FTY Overtime Rate				\$ 44.78	\$ 46.12
FPFTY Overtime \$ By Department				\$ 401,432	\$ 413,475
Department:					
Administration - General				\$ 8,829	\$ 9,093
Capital Management				\$ 5,187	\$ 5,342
Customer Service Field				\$ 7,881	\$ 8,117
Customer Service Office				\$ 61,515	\$ 63,361
Financial Planning				\$ 5,336	\$ 5,496
Maintenance				\$ 21,120	\$ 21,753
Meter Field				\$ 17,366	\$ 17,887
Meter Reading				\$ 3,052	\$ 3,144
Production				\$ 92,875	\$ 95,661
System Maint Distribution				\$ 178,272	\$ 183,620

SUEZ WATER PENNSYLVANIA
EMPLOYEE PAYROLL FOR FULLY PROJECTED FUTURE TEST YEAR ENDED DECEMBER 31, 2019

	Calendar Year 12/31/2015	Calendar Year 12/31/2016	Calendar Year 12/31/2017	Future Test Year 3 Yr. Avg.	Fully Projected Future Test Year 3 Yr. Avg.
Standby Expense					
Standby (\$)	\$ 65,700	\$ 68,874	\$ 87,933	\$ 74,169	
Department:					
Customer Service Field	677	5,093	-	1,923	
Meter Field	2,054	2,948	752	1,918	
Meter Reading	3,029	-	-	1,010	
Production	4,782	3,958	19,638	9,459	
System Maint Distribution	55,158	56,875	67,543	59,859	
Standby (Hours)	2,450	2,502	3,007	2,653	2,653
Department:					
Customer Service Field	27.50	206.50	-	78.00	78.00
Meter Field	83.50	113.50	28.00	75.00	75.00
Meter Reading	122.00	-	-	40.67	40.67
Production	184.50	147.00	649.00	326.83	326.83
System Maint Distribution	2,032.00	2,035.00	2,329.50	2,132.17	2,132.17
				FTY	FPFTY
3 Year Avg Standby Pay (Historical - 2015,2016,2017)				\$ 27.96	
FPFTY Standby Hourly Pay @ 3% Increase to FTY Standby Pay				\$ 28.80	\$ 29.66
FPFTY Standby \$ By Department				\$ 76,394	\$ 78,686
Department:					
Customer Service Field				2,246	2,314
Meter Field				2,160	2,225
Meter Reading				1,171	1,206
Production				9,412	9,695
System Maint Distribution				61,404	63,246

	Calendar Year 12/31/2015	Calendar Year 12/31/2016	Calendar Year 12/31/2017	Future Test Year 3 Yr. Avg.	Fully Projected Future Test Year 3 Yr. Avg.
Shift Expense					
Shift (\$)	\$ 24,459	\$ 19,640	\$ 254	\$ 14,784	\$ 14,784
Department:					
Maintenance	71	100	254	142	142
Meter Reading	414	-	-	138	138
Production	18,516	17,946	-	12,154	12,154
System Maint Distribution	5,458	1,593	-	2,350	2,350
				FTY	FPFTY
FPFTY Overtime Hourly Rate @ 3% Increase to FTY Shift Pay				\$ 15,228	\$ 15,685
FPFTY Standby \$ By Department					
Department:					
Maintenance				146	150
Meter Reading				142	146
Production				12,519	12,894
System Maint Distribution				2,421	2,494

SUEZ WATER PENNSYLVANIA
EMPLOYEE PAYROLL FOR FULLY PROJECTED FUTURE TEST YEAR ENDED DECEMBER 31, 2019

	Calendar Year 12/31/2015	Calendar Year 12/31/2016	Calendar Year 12/31/2017	Future Test Year 3 Yr. Avg.	Fully Projected Future Test Year 3 Yr. Avg.
Substitution Expense					
Substitution (\$)	\$ 5,613	\$ 3,511	\$ 4,290	\$ 4,471	
Department:					
Customer Service Field	173	-	-	58	
Meter Field	2,299	1,763	-	1,354	
System Maint Distribution	3,141	1,748	4,290	3,060	
Substitution (Hours)	116	69	84	90	90
Department:					
Customer Service Field	4.00	-	-	1.33	1.33
Meter Field	48.50	33.00	-	27.17	27.17
System Maint Distribution	63.50	36.00	84.00	61.17	61.17
				<u>FTY</u>	<u>FPFTY</u>
3 Year Avg Overtime Hourly Rate (Historical - 2015,2016,2017)				\$ 49.86	
FTY Overtime Hourly Rate @ 3% Increase to Historical Overtime Rate				\$ 51.36	\$ 52.90
FTY Overtime \$ By Department				\$ 4,605	\$ 4,743
Department:					
Customer Service Field				68	71
Meter Field				1,395	1,437
System Maint Distribution				3,142	3,236

SUEZ WATER PENNSYLVANIA
 LABOR EXPENSE FOR FUTURE TEST YEAR ENDED DECEMBER 31, 2018 - CALCULATION OF PAYROLL TAX

Line #	Employee ID #	Job Title	Office Location	Bargaining Exempt/Non- Exempt	Department	2018 FTY Salary Total	FTY FICA 6.200%	FTY Medicare 1.450%	FUI 0.600%	SUI 2.3905%
1	00000001005	Field Service Representative	PA Harrisburg	Bargaining	Customer Service Field/Meter	\$ 63,198	\$ 3,914	\$ 915	\$ 42	\$ 239
2	00001177634	Field Service Representative	PA Harrisburg	Bargaining	Customer Service Field/Meter	56,806	3,522	824	42	239
3	00001178403	Field Service Representative	PA Harrisburg	Bargaining	Customer Service Field/Meter	50,499	3,131	732	42	239
4	00001176599	Field Service Representative	PA Harrisburg	Bargaining	Customer Service Field/Meter	63,136	3,914	915	42	239
5	00001175239	Customer Serv Rep Office-Harr	PA Harrisburg	Bargaining	Customer Service Office	59,302	3,677	860	42	239
6	00001178480	Customer Serv Rep Office-Harr	PA Harrisburg	Bargaining	Customer Service Office	47,437	2,941	688	42	239
7	00001176579	Customer Serv Rep Office-Harr	PA Harrisburg	Bargaining	Customer Service Office	59,302	3,677	860	42	239
8	00001177762	Customer Serv Rep Office-Harr	PA Harrisburg	Bargaining	Customer Service Office	59,302	3,677	860	42	239
9	00001178715	Customer Serv Rep Office-Harr	PA Harrisburg	Bargaining	Customer Service Office	47,437	2,941	688	42	239
10	00001173185	Customer Serv Rep Office-Harr	PA Harrisburg	Bargaining	Customer Service Office	59,302	3,677	860	42	239
11	00001177869	Customer Serv Rep Office-Harr	PA Harrisburg	Bargaining	Customer Service Office	59,302	3,677	860	42	239
12	00001175987	Customer Serv Rep Office-Harr	PA Harrisburg	Bargaining	Customer Service Office	59,302	3,677	860	42	239
13	00000003025	Customer Serv Rep Office-Harr	PA Harrisburg	Bargaining	Customer Service Office	59,302	3,677	860	42	239
14	00000000917	Maintenance Technician	PA Harrisburg	Bargaining	Maintenance	75,934	4,708	1,101	42	239
15	00000000915	Maintenance Technician	PA Harrisburg	Bargaining	Maintenance	75,934	4,708	1,101	42	239
16	00000001239	Maintenance Technician	PA Harrisburg	Bargaining	Maintenance	75,934	4,708	1,101	42	239
17	00001170134	Electrician	PA Harrisburg	Bargaining	Maintenance	79,220	4,912	1,149	42	239
18	00000001026	Maintenance Technician	PA Harrisburg	Bargaining	Production	78,153	4,845	1,133	42	239
19	00001177000	Relief Operator-Harrisburg	PA Harrisburg	Bargaining	Production	73,835	4,578	1,071	42	239
20	00001172861	Relief Operator-Harrisburg	PA Harrisburg	Bargaining	Production	77,337	4,795	1,121	42	239
21	00000000938	Plant Operator-Harrisburg	PA Harrisburg	Bargaining	Production	76,234	4,726	1,105	42	239
22	00000001027	Plant Operator-Bloomsburg	PA Bloomsburg	Bargaining	Production	71,536	4,436	1,038	42	239
23	00001172607	Plant Operator-Harrisburg	PA Harrisburg	Bargaining	Production	76,234	4,726	1,105	42	239
24	00001173822	Plant Operator-Bloomsburg	PA Bloomsburg	Bargaining	Production	73,955	4,585	1,072	42	239
25	00001173364	Plant Operator-Bloomsburg	PA Bloomsburg	Bargaining	Production	73,955	4,585	1,072	42	239
26	00000000941	Plant Operator-Harrisburg	PA Harrisburg	Bargaining	Production	76,234	4,726	1,105	42	239
27	00001174942	Plant Operator-Bloomsburg	PA Bloomsburg	Bargaining	Production	73,955	4,585	1,072	42	239
28	00000001233	Plant Operator-Harrisburg	PA Harrisburg	Bargaining	Production	76,234	4,726	1,105	42	239
29	00001172938	Plant Operator-Harrisburg	PA Harrisburg	Bargaining	Production	76,234	4,726	1,105	42	239
30	00000000825	Plant Operator-Harrisburg	PA Harrisburg	Bargaining	Production	76,234	4,726	1,105	42	239
31	00000002925	Crew Chief-Bloomsburg	PA Bloomsburg	Bargaining	System Maint Distribution	76,024	4,714	1,102	42	239
32	00000001029	Utility A Person -Bloomsburg	PA Bloomsburg	Bargaining	System Maint Distribution	72,860	4,517	1,056	42	239
33	00001172842	Utility A Person -Bloomsburg	PA Bloomsburg	Bargaining	System Maint Distribution	72,860	4,517	1,056	42	239
34	00000001035	Utility B Person -Bloomsburg	PA Bloomsburg	Bargaining	System Maint Distribution	64,058	3,972	929	42	239
35	00000000872	Equipment Operator-Harrisburg	PA Harrisburg	Bargaining	System Maint Distribution	82,823	5,135	1,201	42	239
36	00001170305	Utility Worker-Harrisburg	PA Harrisburg	Bargaining	System Maint Distribution	74,022	4,589	1,073	42	239
37	00000001073	Utility Worker-Harrisburg	PA Harrisburg	Bargaining	System Maint Distribution	74,022	4,589	1,073	42	239
38	00001172732	Utility Worker-Harrisburg	PA Harrisburg	Bargaining	System Maint Distribution	74,022	4,589	1,073	42	239
39	00001170352	Utility Worker-Harrisburg	PA Harrisburg	Bargaining	System Maint Distribution	74,022	4,589	1,073	42	239
40	00000000489	Equipment Operator-Harrisburg	PA Harrisburg	Bargaining	System Maint Distribution	82,823	5,135	1,201	42	239
41	00001172001	Utility Worker-Harrisburg	PA Harrisburg	Bargaining	System Maint Distribution	74,022	4,589	1,073	42	239
42	00001176622	Utility Worker-Harrisburg	PA Harrisburg	Bargaining	System Maint Distribution	74,022	4,589	1,073	42	239
43	00001172012	Utility Worker-Harrisburg	PA Harrisburg	Bargaining	System Maint Distribution	74,022	4,589	1,073	42	239
44	00000001015	Leader-Harrisburg	PA Harrisburg	Bargaining	System Maint Distribution	85,642	5,310	1,242	42	239
45	00000001164	Leader-Harrisburg	PA Harrisburg	Bargaining	System Maint Distribution	85,642	5,310	1,242	42	239
46	00000000980	Field Service Representative	PA Harrisburg	Bargaining	System Maint Distribution/Meter	71,097	4,408	1,031	42	239
47	00001172754	Utility Worker-Harrisburg	PA Harrisburg	Bargaining	System Maint Distribution	74,022	4,589	1,073	42	239
48	00001178303	Utility Worker-Harrisburg	PA Harrisburg	Bargaining	System Maint Distribution	74,022	4,589	1,073	42	239
49	00000000824	Utility Worker-Harrisburg	PA Harrisburg	Bargaining	System Maint Distribution	74,022	4,589	1,073	42	239
50	00000001467	Leader-Harrisburg	PA Harrisburg	Bargaining	System Maint Distribution	85,642	5,310	1,242	42	239
51		Subtotal				3,550,421	220,126	51,481	2,100	11,953
52										
53	Vacancies:	None								
54		Subtotal								
55										
56	Projected New Hires:									
57	start 1/1/2019	Utility B Person	PA Bloomsburg	Bargaining	System Maint Distribution	68,332	4,237	991	42	239
58	start 1/1/2019	Electrician/SCADA	PA Bloomsburg	Bargaining	Maintenance		4,237	991	42	239
59		Subtotal				68,332	4,237	991	42	239
60										
61		Total Bargaining				3,618,753	224,363	52,472	2,142	12,192

SUEZ WATER PENNSYLVANIA
 LABOR EXPENSE FOR FUTURE TEST YEAR ENDED DECEMBER 31, 2018 - CALCULATION OF PAYROLL TAX

Line #	Employee ID #	Job Title	Office Location	Bargaining Exempt/Non-Exempt	Department	Total	FTY FICA	FTY Medicare	FUI	SUI
81	Non-Exempt/Exempt						6.200%	1.450%	0.600%	2.3905%
82	0000000986	Superintendent	PA Bloomsburg	Exempt	Administration - General	\$ 98,997	\$ 6,138	\$ 1,435	\$ 42	\$ 239
83	00001178714	Manager Water Quality	PA Harrisburg	Exempt	Administration - General	103,644	6,426	1,503	42	239
84	00001176983	NRW Specialist	PA Harrisburg	Exempt	Administration - General	58,705	3,640	851	42	239
85	00001173794	Water Quality Specialist	PA Harrisburg	Exempt	Administration - General	71,370	4,425	1,035	42	239
86	00001177800	Data & Asset Mgmt Specialist	PA Harrisburg	Exempt	Administration - General	72,196	4,476	1,047	42	239
87	0000000966	General Manager	PA Harrisburg	Exempt	Administration - General	290,208	7,979	2,900	42	239
88	00001175835	Director Operations	PA Harrisburg	Exempt	Administration - General	174,376	7,979	2,528	42	239
89	00001173315	Administrative Coordinator	PA Harrisburg	Exempt	Administration - General	74,180	4,599	1,076	42	239
90	00001173428	Senior Engineer	PA Harrisburg	Exempt	Administration - General	127,052	7,877	1,842	42	239
91	00001177671	Manager Env Health & Safety	PA Harrisburg	Exempt	Administration - General	108,060	6,700	1,567	42	239
92	00001173659	Water Quality Specialist	PA Dallas	Exempt	Administration - General	74,941	4,646	1,067	42	239
93	00001172990	Public Affairs Mgr	PA Harrisburg	Exempt	Communications	116,702	7,236	1,692	42	239
94	00001178243	Supervisor Customer Service	PA Harrisburg	Exempt	Customer Service Office	81,113	5,029	1,176	42	239
95	00001178511	Manager Customer Service	PA Harrisburg	Exempt	Customer Service Office	119,890	7,433	1,738	42	239
96	00001178998	GIS Lead	PA Harrisburg	Exempt	Engineering	63,378	3,929	919	42	239
97	00001178264	Project Manager Engineering	PA Harrisburg	Exempt	Engineering	81,113	5,029	1,176	42	239
98	00001170362	Manager Engineering	PA Harrisburg	Exempt	Engineering	127,479	7,904	1,848	42	239
99	00001178568	Engineer	PA Harrisburg	Exempt	Engineering	72,460	4,493	1,051	42	239
80	00001178748	Construction Coordinator	PA Harrisburg	Exempt	Engineering	78,958	4,895	1,145	42	239
81	00001178494	Financial Analyst	PA Harrisburg	Exempt	Financial Planning	68,135	4,224	988	42	239
82	00001178271	Data Analyst	PA Harrisburg	Exempt	Financial Planning	54,075	3,353	784	42	239
83	00001173787	Director Finance	PA Harrisburg	Exempt	Financial Planning	141,948	7,979	2,058	42	239
84	00001174828	Assistant Manager Operations	PA Harrisburg	Exempt	Production	92,202	5,717	1,337	42	239
85	00001175056	Superintendent Production	PA Harrisburg	Exempt	Production	104,303	6,467	1,512	42	239
86	00001173102	Automated System Spec	PA Harrisburg	Exempt	Production	96,917	6,009	1,405	42	239
87	00001176485	Assistant Supervisor Prod/T&D	PA Bloomsburg	Exempt	Production	74,263	4,604	1,077	42	239
88	0000000107	Superintendent Production	PA Bloomsburg	Exempt	Production	81,711	5,066	1,185	42	239
89	00001176419	Superintendent T&D	PA Harrisburg	Exempt	System Maint Distribution	98,411	6,102	1,427	42	239
90	0000000933	Non-Revenue Water Technician	PA Harrisburg	Non-exempt	Administration - General	81,141	5,031	1,177	42	239
91	00001175840	Admin Asst	PA Harrisburg	Non-exempt	Engineering	59,471	3,687	862	42	239
92	00001173427	Accounting Rep	PA Harrisburg	Non-exempt	Financial Planning	61,407	3,807	890	42	239
93	0000000967	Lead Operator	PA Mechanicsburg	Non-exempt	Production	85,199	5,282	1,235	42	239
94	00001172494	Office Asst (Part Time)	PA Harrisburg	Non-exempt	Production	46,498	2,883	674	42	239
95	0000000955	Operator	PA Mechanicsburg	Non-exempt	Production	76,479	4,742	1,109	42	239
96	0000000973	Operator	PA Mechanicsburg	Non-exempt	Production	76,479	4,742	1,109	42	239
97	00001173628	Utility Person	PA Mechanicsburg	Non-exempt	System Maint Distribution	53,772	3,334	780	42	239
98	00001176343	Utility Person	PA Mechanicsburg	Non-exempt	System Maint Distribution	70,720	4,385	1,025	42	239
99	00001175781	Utility Person	PA Mechanicsburg	Non-exempt	System Maint Distribution	70,720	4,385	1,025	42	239
100	00001175433	Utility Person	PA Mechanicsburg	Non-exempt	System Maint Distribution	70,720	4,385	1,025	42	239
101	0000000931	Utility Person	PA Mechanicsburg	Non-exempt	System Maint Distribution	70,720	4,385	1,025	42	239
102	00001172493	Office Asst	PA Harrisburg	Non-exempt	System Maint Distribution	50,987	3,161	739	42	239
103	00001174804	Foreperson	PA Harrisburg	Non-exempt	System Maint Distribution	82,290	5,102	1,193	42	239
104	00001175450	Field Services Tech	PA Dallas	Non-exempt	System Maint Distribution/Meter	61,142	3,791	887	42	239
105	00001172919	Field Services Tech	PA Dallas	Non-exempt	System Maint Distribution/Meter	68,249	4,231	990	42	239
106	00001178112	Field Services Tech	PA Dallas	Non-exempt	System Maint Distribution/Meter	60,591	3,757	879	42	239
107	00000001014	Foreperson	PA Dallas	Non-exempt	System Maint Distribution	83,586	5,182	1,212	42	239
108		Subtotal				4,036,957	236,625	57,228	1,932	10,996
109										
110	Vacancies:	None								
111		Subtotal								
112										
113	Projected New Hires:									
114	start 1/1/2019	Admin Assistant Bloom (Part Time)	PA Bloomsburg	Non-exempt	Admin Gen	-	-	-	-	-
115	start 1/1/2019	Supervisor T&D	PA Harrisburg	Exempt	System Maint Const	-	-	-	-	-
116	start 1/1/2019	Supervisor Prod	PA Harrisburg	Exempt	Production	-	-	-	-	-
117		Subtotal								
118										
119		Total Exempt/Non-Exempt				4,036,957	236,625	57,228	1,932	10,996
120										
121		Bargaining/Exempt/Non-Exempt				\$ 7,655,710	\$ 460,987	\$ 109,700	\$ 4,074	\$ 23,188

LABOR EXPENSE FOR FULLY PROJECTED FUTURE TEST YEAR ENDED DECEMBER 31, 2019 - CALCULATION OF PAYROLL TAX

Line #	Employee ID #	Job Title	Office Location	Bargaining Exempt/Non-Exempt	Department	FPFTY 2019 Total	FTY FICA		FTY Medicare		FUI		SUI	
							6.200%	1.450%	0.600%	2.3905%				
1	0000001005	Field Service Representative	PA Harrisburg	Bargaining	Customer Service Field/Meter	\$ 64,886	\$ 4,023	\$ 941	\$ 42	\$ 239				
2	00001177834	Field Service Representative	PA Harrisburg	Bargaining	Customer Service Field/Meter	58,380	3,620	847	42	239				
3	00001178403	Field Service Representative	PA Harrisburg	Bargaining	Customer Service Field/Meter	51,899	3,218	753	42	239				
4	00001178599	Field Service Representative	PA Harrisburg	Bargaining	Customer Service Field/Meter	64,886	4,023	941	42	239				
5	00001175239	Customer Serv Rep Office-Harr	PA Harrisburg	Bargaining	Customer Service Office	60,951	3,779	884	42	239				
6	00001178480	Customer Serv Rep Office-Harr	PA Harrisburg	Bargaining	Customer Service Office	48,756	3,023	707	42	239				
7	00001178579	Customer Serv Rep Office-Harr	PA Harrisburg	Bargaining	Customer Service Office	60,951	3,779	884	42	239				
8	00001177762	Customer Serv Rep Office-Harr	PA Harrisburg	Bargaining	Customer Service Office	60,951	3,779	884	42	239				
9	00001178715	Customer Serv Rep Office-Harr	PA Harrisburg	Bargaining	Customer Service Office	48,756	3,023	707	42	239				
10	00001173195	Customer Serv Rep Office-Harr	PA Harrisburg	Bargaining	Customer Service Office	60,951	3,779	884	42	239				
11	00001177689	Customer Serv Rep Office-Harr	PA Harrisburg	Bargaining	Customer Service Office	60,951	3,779	884	42	239				
12	00001175987	Customer Serv Rep Office-Harr	PA Harrisburg	Bargaining	Customer Service Office	60,951	3,779	884	42	239				
13	0000003025	Customer Serv Rep Office-Harr	PA Harrisburg	Bargaining	Customer Service Office	60,951	3,779	884	42	239				
14	0000000917	Maintenance Technician	PA Harrisburg	Bargaining	Maintenance	77,013	4,775	1,117	42	239				
15	0000000815	Maintenance Technician	PA Harrisburg	Bargaining	Maintenance	77,013	4,775	1,117	42	239				
16	0000001230	Maintenance Technician	PA Harrisburg	Bargaining	Maintenance	77,013	4,775	1,117	42	239				
17	00001170134	Electrician	PA Harrisburg	Bargaining	Maintenance	80,346	4,981	1,165	42	239				
18	start 1/1/2019	Electrician/SCADA	PA Bloomsburg	Bargaining	Maintenance	72,467	4,493	1,051	42	239				
19	0000001028	Maintenance Technician	PA Harrisburg	Bargaining	Production	80,318	4,980	1,165	42	239				
20	00001177000	Relief Operator-Harrisburg	PA Harrisburg	Bargaining	Production	75,880	4,705	1,100	42	239				
21	00001172861	Relief Operator-Harrisburg	PA Harrisburg	Bargaining	Production	79,480	4,928	1,152	42	239				
22	0000000839	Plant Operator-Harrisburg	PA Harrisburg	Bargaining	Production	78,346	4,857	1,136	42	239				
23	00000001027	Plant Operator-Bloomsburg	PA Bloomsburg	Bargaining	Production	73,538	4,559	1,066	42	239				
24	00001172607	Plant Operator-Harrisburg	PA Harrisburg	Bargaining	Production	78,346	4,857	1,136	42	239				
25	00001173622	Plant Operator-Bloomsburg	PA Bloomsburg	Bargaining	Production	76,004	4,712	1,102	42	239				
26	00001173384	Plant Operator-Bloomsburg	PA Bloomsburg	Bargaining	Production	76,004	4,712	1,102	42	239				
27	0000000941	Plant Operator-Harrisburg	PA Harrisburg	Bargaining	Production	78,346	4,857	1,136	42	239				
28	00001174942	Plant Operator-Bloomsburg	PA Bloomsburg	Bargaining	Production	76,004	4,712	1,102	42	239				
29	0000001233	Plant Operator-Harrisburg	PA Harrisburg	Bargaining	Production	78,346	4,857	1,136	42	239				
30	00001172936	Plant Operator-Harrisburg	PA Harrisburg	Bargaining	Production	78,346	4,857	1,136	42	239				
31	0000000825	Plant Operator-Harrisburg	PA Harrisburg	Bargaining	Production	78,346	4,857	1,136	42	239				
32	0000002825	Crew Chief-Bloomsburg	PA Bloomsburg	Bargaining	System Maint Distribution	77,817	4,825	1,128	42	239				
33	0000001029	Utility A Person -Bloomsburg	PA Bloomsburg	Bargaining	System Maint Distribution	74,578	4,624	1,081	42	239				
34	00001172842	Utility A Person -Bloomsburg	PA Bloomsburg	Bargaining	System Maint Distribution	74,578	4,624	1,081	42	239				
35	0000001035	Utility B Person -Bloomsburg	PA Bloomsburg	Bargaining	System Maint Distribution	65,569	4,065	951	42	239				
36	0000000872	Equipment Operator-Harrisburg	PA Harrisburg	Bargaining	System Maint Distribution	84,776	5,256	1,229	42	239				
37	00001170305	Utility Worker-Harrisburg	PA Harrisburg	Bargaining	System Maint Distribution	75,767	4,698	1,099	42	239				
38	0000001073	Utility Worker-Harrisburg	PA Harrisburg	Bargaining	System Maint Distribution	75,767	4,698	1,099	42	239				
39	00001172732	Utility Worker-Harrisburg	PA Harrisburg	Bargaining	System Maint Distribution	75,767	4,698	1,099	42	239				
40	00001170352	Utility Worker-Harrisburg	PA Harrisburg	Bargaining	System Maint Distribution	75,767	4,698	1,099	42	239				
41	0000000499	Equipment Operator-Harrisburg	PA Harrisburg	Bargaining	System Maint Distribution	84,776	5,256	1,229	42	239				
42	00001172001	Utility Worker-Harrisburg	PA Harrisburg	Bargaining	System Maint Distribution	75,767	4,698	1,099	42	239				
43	00001176822	Utility Worker-Harrisburg	PA Harrisburg	Bargaining	System Maint Distribution	75,767	4,698	1,099	42	239				
44	00001172012	Utility Worker-Harrisburg	PA Harrisburg	Bargaining	System Maint Distribution	75,767	4,698	1,099	42	239				
45	00000001015	Leader-Harrisburg	PA Harrisburg	Bargaining	System Maint Distribution	87,661	5,435	1,271	42	239				
46	0000001164	Leader-Harrisburg	PA Harrisburg	Bargaining	System Maint Distribution	87,661	5,435	1,271	42	239				
47	0000000890	Field Service Representative	PA Harrisburg	Bargaining	System Maint Distribution/Meter	72,795	4,519	1,056	42	239				
48	00001172754	Utility Worker-Harrisburg	PA Harrisburg	Bargaining	System Maint Distribution	75,767	4,698	1,099	42	239				
49	00001178303	Utility Worker-Harrisburg	PA Harrisburg	Bargaining	System Maint Distribution	75,767	4,698	1,099	42	239				
50	0000000824	Utility Worker-Harrisburg	PA Harrisburg	Bargaining	System Maint Distribution	75,767	4,698	1,099	42	239				
51	00000001467	Leader-Harrisburg	PA Harrisburg	Bargaining	System Maint Distribution	87,661	5,435	1,271	42	239				
52	start 1/1/2019	Utility B Person	PA Bloomsburg	Bargaining	System Maint Distribution									
53		Subtotal				3,710,911	230,076	53,808	2,142	12,192				
54														
55	Vacancies:	None												
56		Subtotal												
57														
58	Projected New Hires:	None												
59		Subtotal												
60														
61		Total Bargaining				3,710,911	230,076	53,808	2,142	12,192				

LABOR EXPENSE FOR FULLY PROJECTED FUTURE TEST YEAR ENDED DECEMBER 31, 2019 - CALCULATION OF PAYROLL TAX

Line #	Employee ID #	Job Title	Office Location	Bargaining Exempt/Non-Exempt	Department	Total	FTY FICA	FTY Medicare	FUI	SUI
61	Non-Exempt/Exempt						6.200%	1.450%	0.600%	2.3805%
62	0000000986	Superintendent	PA Bloomsburg	Exempt	Administration - General	101,967	\$ 6,322	\$ 1,479	\$ 42	\$ 239
63	00001178714	Manager Water Quality	PA Harrisburg	Exempt	Administration - General	106,753	6,619	1,548	42	239
64	00001178983	NRW Specialist	PA Harrisburg	Exempt	Administration - General	60,466	3,749	877	42	239
65	00001173794	Water Quality Specialist	PA Harrisburg	Exempt	Administration - General	73,511	4,558	1,066	42	239
66	00001177800	Data & Asset Mgmt Specialist	PA Harrisburg	Exempt	Administration - General	74,362	4,610	1,078	42	239
67	0000000966	General Manager	PA Harrisburg	Exempt	Administration - General	298,914	18,533	4,334	42	239
68	00001175835	Director Operations	PA Harrisburg	Exempt	Administration - General	179,607	11,136	2,604	42	239
69	00001173315	Administrative Coordinator	PA Harrisburg	Exempt	Administration - General	76,406	4,757	1,108	42	239
70	00001173426	Senior Engineer	PA Harrisburg	Exempt	Administration - General	130,863	8,114	1,898	42	239
71	00001177671	Manager Env Health & Safety	PA Harrisburg	Exempt	Administration - General	111,301	6,901	1,614	42	239
72	00001173659	Water Quality Specialist	PA Dallas	Exempt	Administration - General	77,190	4,786	1,119	42	239
73	00001172860	Public Affairs Mgr	PA Harrisburg	Exempt	Communications	120,203	7,453	1,743	42	239
74	00001178243	Supervisor Customer Service	PA Harrisburg	Exempt	Customer Service Office	83,546	5,180	1,211	42	239
75	00001178511	Manager Customer Service	PA Harrisburg	Exempt	Customer Service Office	123,487	7,656	1,791	42	239
76	00001178088	GIS Lead	PA Harrisburg	Exempt	Engineering	65,279	4,047	947	42	239
77	00001178264	Project Manager Engineering	PA Harrisburg	Exempt	Engineering	85,546	5,180	1,211	42	239
78	00001170362	Manager Engineering	PA Harrisburg	Exempt	Engineering	131,304	8,141	1,904	42	239
79	00001178568	Engineer	PA Harrisburg	Exempt	Engineering	74,634	4,627	1,082	42	239
80	00001173746	Construction Coordinator	PA Harrisburg	Exempt	Engineering	61,327	5,042	1,179	42	239
81	00001178494	Financial Analyst	PA Harrisburg	Exempt	Financial Planning	70,179	4,351	1,018	42	239
82	00001178271	Data Analyst	PA Harrisburg	Exempt	Financial Planning	55,697	3,453	808	42	239
83	00001173787	Director Finance	PA Harrisburg	Exempt	Financial Planning	146,207	9,065	2,120	42	239
84	00001174828	Assistant Manager Operations	PA Harrisburg	Exempt	Production	94,968	5,888	1,377	42	239
85	00001175056	Superintendent Production	PA Harrisburg	Exempt	Production	107,432	6,661	1,558	42	239
86	00001173102	Automated System Spec	PA Harrisburg	Exempt	Production	99,824	6,189	1,447	42	239
87	00001178485	Assistant Supervisor Prod/T&D	PA Bloomsburg	Exempt	Production	76,491	4,742	1,109	42	239
88	0000000197	Superintendent Production	PA Bloomsburg	Exempt	Production	84,162	5,218	1,220	42	239
89	start 1/1/2019	Supervisor Prod	PA Harrisburg	Exempt	Production	80,983	5,021	1,174	42	239
90	00001178419	Superintendent T&D	PA Harrisburg	Exempt	System Maint Distribution	101,364	6,285	1,470	42	239
91	start 1/1/2019	Supervisor T&D	PA Harrisburg	Exempt	System Maint Distribution	86,397	5,357	1,253	42	239
92	00000000933	Non-Revenue Water Technician	PA Harrisburg	Non-exempt	Administration - General	81,188	5,034	1,177	42	239
93	start 1/1/2019	Admin Assistant Bloom (Part Time)	PA Bloomsburg	Non-exempt	Administration - General	28,815	1,787	418	42	239
94	00001175840	Admin Asst	PA Harrisburg	Non-exempt	Engineering	61,255	3,798	888	42	239
95	00001173427	Accounting Rep	PA Harrisburg	Non-exempt	Financial Planning	63,250	3,921	917	42	239
96	0000000967	Lead Operator	PA Mechanicsburg	Non-exempt	Production	87,768	5,442	1,273	42	239
97	00001172494	Office Asst (Part Time)	PA Harrisburg	Non-exempt	Production	47,783	2,963	693	42	239
98	0000000955	Operator	PA Mechanicsburg	Non-exempt	Production	78,785	4,885	1,142	42	239
99	0000000973	Operator	PA Mechanicsburg	Non-exempt	Production	78,785	4,885	1,142	42	239
100	00001173628	Utility Person	PA Mechanicsburg	Non-exempt	System Maint Distribution	55,266	3,427	801	42	239
101	00001176343	Utility Person	PA Mechanicsburg	Non-exempt	System Maint Distribution	72,685	4,506	1,054	42	239
102	00001175781	Utility Person	PA Mechanicsburg	Non-exempt	System Maint Distribution	72,685	4,506	1,054	42	239
103	00001175433	Utility Person	PA Mechanicsburg	Non-exempt	System Maint Distribution	72,685	4,506	1,054	42	239
104	0000000931	Utility Person	PA Mechanicsburg	Non-exempt	System Maint Distribution	72,685	4,506	1,054	42	239
105	00001172483	Office Asst	PA Harrisburg	Non-exempt	System Maint Distribution	52,404	3,249	760	42	239
106	00001174804	Foreperson	PA Harrisburg	Non-exempt	System Maint Distribution	84,577	5,244	1,226	42	239
107	00001175450	Field Services Tech	PA Dallas	Non-exempt	System Maint Distribution/Meter	62,850	3,897	911	42	239
108	00001172819	Field Services Tech	PA Dallas	Non-exempt	System Maint Distribution/Meter	70,157	4,350	1,017	42	239
109	00001178112	Field Services Tech	PA Dallas	Non-exempt	System Maint Distribution/Meter	62,284	3,862	903	42	239
110	0000001014	Foreperson	PA Dallas	Non-exempt	System Maint Distribution	85,909	5,326	1,246	42	239
111		Subtotal				4,350,188	269,712	63,078	2,058	11,713
112										
113	Vacancies:	None								
114		Subtotal								
115										
116	Projected New Hires:	None								
117		Subtotal								
118										
119		Total Exempt/Non-Exempt				4,350,188	269,712	63,078	2,058	11,713
120										
121		Total Bargaining/Exempt/Non-Exempt				8,061,099	499,788	116,886	4,200	23,905

SUEZ Water Pennsylvania
Docket No. R-2018-3000834
Operation and Maintenance Expenses - Rebuttal
For the Historical, Future and Fully Projected Future Test Year

Line No.	Account Number	Utility Operating Expenses	Adjustment No.	12-Months Ending 12/31/2017	Future Test Year Adjustments	Future Test Year 12/31/2018	Fully Projected Future Test Year Adjustments Present Rates	Fully Projected Year Under Present Rates 12/31/2019	Fully Projected Future Test Year Adjustments Proposed Rates	Fully Projected Future Test Year Under Proposed Rates 12/31/2019
1	601.0	Labor Expense	1	\$ 4,579,937	\$ 515,624	\$ 5,095,561	\$ 323,537	\$ 5,419,097		\$ 5,419,097
2	604.0	Employee Group Health & Life	2	1,323,689	13,126	1,336,815	88,314	1,425,129		1,425,129
3	604.0	Employee Pension Benefits	3	1,425,022	(15,433)	1,409,589	32,421	1,442,010		1,442,010
4	604.0	Employee Post Retirement Benefits Other than Pension	4	(457,246)	(73,478)	(530,724)	(12,207)	(542,931)		(542,931)
5	604.0	Other Employee Benefits	5	215,054	36,022	251,075	12,893	263,969		263,969
6	610.0	Purchased Water	6	68,621	7,555	76,176	106,752	182,928		182,928
7	615.0	Purchased Power	7	1,242,836	168,877	1,411,713	-	1,411,713		1,411,713
8	616.0	Fuel for Power Production	8	184,165	(161,001)	23,163	533	23,696		23,696
9	618.0	Chemicals	9	540,682	45,366	586,048	13,479	599,527		599,527
10	620.0	Materials and Supplies	10	254,476	(4,411)	250,065	5,751	255,816		255,816
11	634.0	Management and Service Fees	11	4,921,757	265,563	5,187,320	32,241	5,219,561		5,219,561
12	635.0	Lab Testing Fees	12	114,698	(32,810)	81,888	1,653	83,542		83,542
13	636.0	Outside Contractors	13	748,644	231,111	979,755	167,359	1,147,114		1,147,114
14	636.0	Outside Professional Services	14	64,321	2,339	66,660	1,533	68,193		68,193
15	641.0	Rental - Building/Real Property	15	60,330	146	60,476	(30,258)	30,219		30,219
16	642.0	Rental of Equipment	16	49,175	1,045	50,220	1,155	51,375		51,375
17	650.0	Transportation Expense	17	407,033	56,863	463,897	96,426	560,322		560,322
18	657.0	Prop& Gen Lib. Insurance	18	4,732	101	4,832	103	4,935		4,935
19	658.0	Worker Compensation	19	102,384	5,844	108,228	2,489	110,717		110,717
20	660.0	Advertising	20	3,517	75	3,592	83	3,674		3,674
21	666-667	Rate Case Expense - Amort	21	140,080	(11,674)	128,407	60,593	189,000		189,000
22	666-667	Regulatory Commission Expense	22	198,665	21,215	219,880	15,464	235,344	26,958	262,302
23	670.0	Bad Debt Expense	23	155,640	(298)	155,342	10,925	166,266	19,045	185,312
24	675.0	Fringe Benefit Expense Transfer	24	(1,059,720)	16,726	(1,042,994)	(56,096)	(1,099,090)		(1,099,090)
25	675.6	Office Expense and Utilities	25	446,337	(26,796)	419,541	121,353	540,894		540,894
26	675.9	Postage and Air Freight Expense	26	354,308	4,256	358,563	7,795	366,358		366,358
27	Various	Other O&M	27	143,806	55,547	199,353	4,585	203,938		203,938
28		Adjustments for Mahoning Twp Acquisition	28	\$ -	\$ -	\$ -	\$ -	\$ -		\$ -
29		Total Operation and Maintenance Expenses		\$ 16,232,944	\$ 1,121,497	\$ 17,354,440	\$ 1,008,878	\$ 18,363,318	\$ 46,003	\$ 18,409,322
30										
31		Inflation Rate Calculator	29		2.13%		2.30%			
32										
33		Taxes Other Than Income								
34		Real Estate Tax	30	\$ 270,553	\$ 40,472	\$ 311,025	\$ 7,154	\$ 318,178	\$ -	\$ 318,178
35		Payroll	31	560,626	37,323	597,949	46,830	644,779	-	644,779
36										
37		Total Taxes Other Than Income		\$ 831,179	\$ 77,795	\$ 908,973	\$ 53,984	\$ 962,957	\$ -	\$ 962,957
38										
39		Depreciation Expense	32	\$ 7,361,991	\$ 691,340	\$ 8,053,332	\$ 562,130	\$ 8,615,462	\$ -	\$ 8,615,462
40		Amortization of Acquisition Adjustment		\$ 57,744	\$ -	\$ 57,744	\$ -	\$ 57,744	\$ -	\$ 57,744
41		Amortization of Regulatory Liability	32	\$ -	\$ (264,891)	\$ (264,891)	\$ -	\$ (264,891)	\$ -	\$ (264,891)
42										
43										
44		Income Taxes	34	\$ 6,832,581	\$ (3,056,910)	\$ 3,775,671	\$ 86,952	\$ 3,862,623	\$ 1,533,015	\$ 5,395,638
45										
46		Total		\$ 31,316,439	\$ (1,166,278)	\$ 29,885,269	\$ 1,711,944	\$ 31,597,213	\$ 1,579,019	\$ 33,176,232

Line No.	Description	12 Months Ended 12/31/2017	Future Test Year	Fully Projected Future Test Year	
1	Labor Expense - net of capitalized/transferred in/out	\$ 4,579,937	\$ 5,095,561 (a)	\$ 5,419,097 (a)	\$ 39,845
2					
3	Total Labor Expense	<u>\$ 4,579,937</u>	<u>\$ 5,095,561</u>	<u>\$ 5,419,097</u>	
4					
5	Adjustment		\$ 515,624	\$ 323,537	
6					
7	<u>Reference Notes:</u>				
8	(a) See Workpaper CEH-2.1				
9					

Line No.		12 Months Ended 12/31/2017	Future Test Year	Fully Projected Future Test Year
1	Total Employee Pensions & Benefits	\$ 1,323,689	\$ 1,336,815	\$ 1,425,129
2				
3	Adjustment		\$ 13,126	\$ 88,314
4				
5			Future Test Year	Fully Projected Future Test Year
6	Description			
7				
8	Medical Insurance		\$ 1,208,956 (a)	\$ 1,288,836 (b)
9				
10	Dental		72,607 (a)	77,405 (b)
11				
12	Group Life Insurance		55,252 (a)	58,888 (b)
13				
14	Total Employee Pensions & Benefits		\$ 1,336,815	\$ 1,425,129

	New Employees Adjustment	Number of New Employees	Average Cost of Coverage	Total Employees with Coverage (%)
18	2018 Medical	4	\$ 15,112	84%
19	2018 Dental	4	835	92%
20	2018 Group Life			
21	Basic STD	4	34	100%
22	Basic LTD	4	294	100%
23	Basic Life 1X annual	4	114	23%
24	Basic Life 3 X annual	4	322	69%

26 **Inflation Rate:**

27 Fully Projected Future Test Year 2.300%

29 **Reference Notes:**

30 (a) The company provided Future Test Year Employee Group Health and Life Insurance expenses.

31 (b) Based on the the Future Test Year Cost with FPFTY Inflation Rate. The FPFTY Employee Group Health and Life Insurance
32 expenses are adjusted for the four new employees in 2019. The new employee adjustment takes the number
33 of new hires, multiplied by the average Cost of Coverage of existing employees and the
34 percentage of existing employees with coverage, and added to the
35 Future Test Year Insurance expenses. This adjustment is inflated using the FPFTY Rate of 2.3%.

Line No.	Description	12 Months Ended 12/31/2017	Future Test Year	Fully Projected Future Test Year	
1	Employee Pension Benefits	\$ 1,425,022	\$ 1,409,589 (a)	\$ 1,442,010 (b)	\$ (32,421)
2					
3	Total Employee Pension Benefits	<u>\$ 1,425,022</u>	<u>\$ 1,409,589</u>	<u>\$ 1,442,010</u>	
4					
5	Adjustment		\$ (15,433)	\$ 32,421	
6					
7	<u>Inflation Rate:</u>				
8	Fully Projected Future Test Year	2.300%			
9					
10	<u>Reference Notes:</u>				
12	(a) Used 2018 estimated ASC 715-30 Net Periodic Pension Cost provided by Actuary.				
13	(b) Based upon Future Test Year cost with Fully Projected Future Test Year inflation rate.				

Line No.	Description	12 Months Ended 12/31/2017	Future Test Year	Fully Projected Future Test Year
1	Employee PEBOP Expense	\$ (457,246)	\$ (530,724)	\$ (542,931)
2				
3	Total Employee PEBOP Expense	<u>\$ (457,246)</u>	<u>\$ (530,724)</u>	<u>\$ (542,931)</u>
4				
5	Adjustment		\$ (73,478)	\$ (12,207)
6				
7	Inflation Rate:			
8	Fully Projected Future Test Year	2.300%		
9				
10	Reference Notes:			
11	(a) Used 2018 estimated ASC 715-30 Net Periodic Pension Cost provided by Actuary.			
12	(b) Based upon Future Test Year cost with Fully Projected Future Test Year inflation rate.			

Line No.	Description	12 Months Ended 12/31/2017	Future Test Year	Fully Projected Future Test Year
1	401K Matching	\$ 201,925	\$ 237,668 (a)	\$ 250,253 (b)
2				
3	Other Benefits	\$ 13,129	\$ 13,408 (c)	\$ 13,716 (d)
4				
5	Total 401K Matching and Other Benefits	<u>\$ 215,054</u>	<u>\$ 251,075</u>	<u>\$ 263,969</u>
6				
7	Adjustment		\$ 36,022	\$ 12,893
8				
9				
10	<u>Year</u>	<u>Gross Salary</u>	<u>401K Contribution (%)</u>	
11				
12	2018	7,655,710	3.10%	
13	2019	8,061,099	3.10%	
14				
15	Inflation Rate:			
16	Future Test Year	2.125%		
17	Fully Projected Future Test Year	2.300%		
18				
19	Reference Notes:			
20	(a) 401K Matching adjustment takes the Future Test Year's Gross Salary, multiplied by the			
21	Historic Test Year's 401K contribution percentage.			
22	(b) 401K Matching adjustment takes the Fully Projected Future Test Year's Gross Salary,			
23	multiplied by the Historic Test Year's 401K contribution percentage.			
24	(c) Based upon the Historic Test Year with the Future Test Year inflation rate.			
25	(d) Based upon the Future Test Year with the Fully Projected Future Test Year inflation rate.			

Line No.	Description	12 Months Ended 12/31/2017	Future Test Year	Fully Projected Future Test Year
1	Purchased Water	\$ 68,621	\$ 76,176 (a)	\$ 77,928 (b)
2				
3	Additional Purchased Water From Susquehanna Area Regional Airport Authority (SARAA)			105,000 (c)
4				
5	Total Purchased Water	\$ 68,621	\$ 76,176	\$ 182,928
6				
7	Adjustment		\$ 7,555	\$ 106,752
8				
9				
10		Cost of Water	Consumption 1000 Gal	
11	Year	\$ 84,246	16,208	
12	2015	\$ 70,906	12,811	
13	2016	\$ 68,621	13,612	
14	2017			
15	3 Year Average	\$ 74,591	14,210	
16				
17	Inflation Rate:			
18	Future Test Year	2.125%		
19	Fully Projected Future Test Year	2.300%		
20				
21	Reference Notes:			
22	(a) Based upon three year average with Future Test Year Inflation rate.			
23	(b) Based upon Future Test Year cost with Fully Projected Future Test Year Inflation rate.			
24	(c) The Company will begin purchasing water from SARAA in 2019 with a minimum take of \$105,000.			

Line No.	Description	12 Months Ended 12/31/2017	Future Test Year	Fully Projected Future Test Year
1	Purchased Power Expense	\$ 1,242,836	\$ 1,411,713 (a)	\$ 1,411,713 (a)
2				
3	Adjustment		\$ 168,877	\$ -
4				
5		NARUC Power		Prduction
6	<u>Year</u>	<u>Expense</u>	<u>kWh</u>	<u>(MG)</u>
7	2015	\$ 1,363,806	18,781,378	6450.5071
8	2016	\$ 1,466,981	19,101,533	6414.6870
9	2017	\$ 1,404,353	18,124,940	6125.9850
10				
11	3 Year Average	\$ 1,411,713	18,669,284	6330.3930
12				
13	Adjustment Factor:			
14	Future Test Year	0.000%		
15	Fully Projected Future Test Year	0.000%		
16				
17	Reference Notes:			
18	(a) Based upon the 2017 actual expense adjusted for Fuel and Power Production that was included in Account 616 in Schedule 9.			
19				

Line No.	Description	12 Months Ended 12/31/2017	Future Test Year	Fully Projected Future Test Year
1	Fuel - Power Production	\$ 184,165	\$ 23,163 (a)	\$ 23,696 (b)
2				
3	Total Fuel for Power Production	<u>\$ 184,165</u>	<u>\$ 23,163</u>	<u>\$ 23,696</u>
4				
5	Adjustment		\$ (161,001)	\$ 533
6				
15	<u>Inflation Rate:</u>			
16	Future Test Year	2.125%		
17	Fully Projected Future Test Year	2.300%		
18				
19	<u>Reference Notes:</u>			
20	(a) Based upon historic test year Diesel Fuel for Generator expense with Future Test Year			
21	inflation rate.			
	(b) Based upon Future Test Year expense with Fully Projected Future Test Year inflation rate.			

Line No.	Description	12 Months Ended 12/31/2017	Future Test Year	Fully Projected Future Test Year
1	Chemical Expense	\$ 540,682	\$ 586,048 (a)	\$ 599,527 (b)
2				
3	Total Chemical Expense	<u>\$ 540,682</u>	<u>\$ 586,048</u>	<u>\$ 599,527</u>
4				
5	Adjustment		\$ 45,366	\$ 13,479
6				
7				
8	<u>Year</u>	<u>Chemical Expense</u>		
9	2015	\$ 597,781.13		
10	2016	583,097.19		
11	2017	540,682.11		
12				
13	3 Year Average	\$ 573,853.48		
14				
15	<u>Inflation Rate:</u>			
16	Future Test Year		2.125%	
17	Fully Projected Future Test Year		2.300%	
18				
19	<u>Reference Notes:</u>			
20	(a) Based upon three year average with Future Test Year inflation rate.			
21	(b) Based upon Future Test Year cost with Fully Projected Future Test Year inflation rate.			

Line No.	Description	12 Months Ended 12/31/2017	Future Test Year	Fully Projected Future Test Year	
1	Materials and Supplies	\$ 254,476	\$ 250,065 (a)	\$ 255,816 (b)	
2					283439
3	Total Materials and Supplies	<u>\$ 254,476</u>	<u>\$ 250,065</u>	<u>\$ 255,816</u>	\$ 27,623
4					
5	Adjustment		\$ (4,411)	\$ 5,751	
6					
7					
8		Materials and Supplies			
9	<u>Year</u>	<u>Expense</u>			
10	2015	\$ 324,181			
11	2016	235,247			
12	2017	254,476			
13					
14	2 Year Average	\$ 244,861			
15					
16	Inflation Rate:				
17	Future Test Year	2.125%			
18	Fully Projected Future Test Year	2.300%			
19					
20	Reference Notes:				
21	(a) Based upon three year average with Future Test Year inflation rate.				
22	(b) Based upon Future Test Year cost with Fully Projected Future Test Year inflation rate.				

Line No.	Description	12 Months Ended 12/31/2017	Future Test Year	Fully Projected Future Test Year
1	Management & Service Fees	\$ 4,509,809	\$ 5,289,281 (a)	\$ 5,359,497 (b)
2				
3	Non-Recoverable Management Fees (c)	\$ 411,947 (b)	\$ -	\$ -
4				
5	Rebuttal		\$ (101,961)	\$ (139,936)
6	Total Management & Service Fees	<u>\$ 4,921,757</u>	<u>\$ 5,187,320</u>	<u>\$ 5,219,561</u>
7				
8				
9				
10	Adjustment		\$ 265,563	\$ 32,241
11				
12	<u>Reference Notes:</u>			
13	(a) Please see MFR III-06			
14	(b) Non-recoverable for rate making purposes.			
15				
16				

Line No.	Description	12 Months Ended 12/31/2017	Future Test Year	Fully Projected Future Test Year
1	Lab Testing Fees	\$ 114,698	\$ 81,888 (a)	\$ 83,542 (b)
2				
3	Total Lab Testing Fees	<u>\$ 114,698</u>	<u>\$ 81,888</u>	<u>\$ 83,542</u>
4				
5	Adjustment		\$ (32,810)	\$ 1,653
6				
7		Lab Testing Fees	UCMR4 Testing Fee	
8	<u>Year</u>			
9	2015	\$ 71,150		
10	2016	69,635		
11	2017	114,698		
12				
13	2015 and 2016 Average	70,392	10,000	
14				
15	Inflation Rate:			
16	Future Test Year	2.125%		
17	Fully Projected Future Test Year	2.300%		
18				
19	Reference Notes:			
20	(a) Based upon two year average with Future Test Year inflation rate, plus the UCMR4			
21	testing fee normalized over three years.			
22	(b) Based upon Future Test Year cost with Fully Projected Future Test Year inflation rate.			

Line No.	Description	12 Months Ended 12/31/2017	Future Test Year	Fully Projected Future Test Year
1	Outside Contractors	\$ 748,644	\$ 754,755 (a)	\$ 772,114 (b)
2				
3	Additional Convenience Fees			150,000 (c)
4	NRW Study		150,000	150,000 (d)
5	Inventory Process Study		75,000	75,000 (d)
6				
7	Total Outside Contractors	<u>\$ 748,644</u>	<u>\$ 979,755</u>	<u>\$ 1,147,114</u>
8				
9	Adjustment		\$ 231,111	\$ 167,359
10				
11		Outside Contractor's		
12		Expense		
13	<u>Year</u>			
14	2016	729,456		
15	2017	748,644		
16	Two Year Average	<u>\$ 739,050</u>		
17				
18	Inflation Rate:			
19	Future Test Year		2.125%	
20	Fully Projected Future Test Year		2.300%	
21				
22	Reference Notes:			
23	(a) Based upon two year average with Future Test Year inflation rate.			
24	(b) Based upon Future Test Year cost with Fully Projected Future Test Year inflation rate.			
25	(c) Customers are no longer charged a convenience fee for using a credit card to pay water bills,			
26	as an incentive to move customers to e-billing. The company will take on \$150,000			
27	in convenience fees in 2019.			
28	(d) Two year normalization of Company studies.			

Line No.	Description	12 Months Ended 12/31/2017	Future Test Year	Fully Projected Future Test Year
1	Outside Professional Services	\$ 64,321	\$ 66,660 (a)	\$ 68,193 (b)
2				
3	Total Outside Professional Services	<u>\$ 64,321</u>	<u>\$ 66,660</u>	<u>\$ 68,193</u>
4				
5	Adjustment		\$ 2,339	\$ 1,533
6				
7				
8				
9	<u>Year</u>	<u>Outside Professional Services Expense</u>		
10	2015	\$ 81,018		
11	2016	51,134		
12	2017	63,667		
13				
14	3 Year Average	\$ 65,273		
15				
16	Inflation Rate:			
17	Future Test Year		2.125%	
18	Fully Projected Future Test Year		2.300%	
19				
20	Reference Notes:			
21	(a) Based upon three year average with Future Test Year inflation rate.			
22	(b) Based upon Future Test Year cost with Fully Projected Future Test Year inflation rate.			

Line No.	Description	12 Months Ended 12/31/2017	Future Test Year	Fully Projected Future Test Year
1	Rent	\$ 60,330	\$ 60,476 (b)	\$ 30,219 (b)
2				
3	Total Rent	<u>\$ 60,330</u>	<u>\$ 60,476</u>	<u>\$ 30,219</u>
4				
5	Adjustment		\$ 146	\$ (30,258)
6				
7				
8	Year	Rent Expense	Contract	
9	2017	\$ 120,952	2/1/17-1/31/18	
10	2018	\$ 120,952	2/1/18-1/31/19	
11	2019	\$ 120,952 (a)		
12				

Reference Notes:

- (a) Company anticipates moving into a new building in December 2019.
Value accounts for the old building's monthly rent from 2/1/19 to 12/31/19.
- (b) Includes additional taxes and utilities for the New Administrative building

Line No.	Description	12 Months Ended 12/31/2017	Future Test Year	Fully Projected Future Test Year
1	Office Equipment Rental	\$ 49,175	\$ 50,220	\$ 51,375
2				
3	Total Office Equipment Rental	<u>\$ 49,175</u>	<u>\$ 50,220</u>	<u>\$ 51,375</u>
4				
5	Adjustment		\$ 1,045	\$ 1,155
6				
7	Inflation Rate:			
8	Future Test Year	2.125%		
9	Fully Projected Future Test Year	2.300%		
10				
11	Reference Notes:			
12	(a) Based upon historic test year with Future Test Year inflation rate.			
13	(b) Based upon Future Test Year cost with Fully Projected Future Test Year inflation rate.			

Line No.	Description	12 Months Ended 12/31/2017	Future Test Year	Fully Projected Future Test Year	
1	Leases	\$ 304,463.58	\$ 285,266.20 (a)	\$ 377,583.48 (a)	
2	Car Allowance	\$ 15,799.92	\$ 10,757.11 (b)	\$ 11,004.53 (c)	
3	Fuel	\$ 138,997.73	\$ 102,938.89 (b)	\$ 105,306.48 (c)	
4	Maintenance & Repair	\$ 139,310.78	\$ 113,072.70 (b)	\$ 115,673.37 (c)	
5	Payroll				
6	Insurance	\$ 24,059.59	\$ 31,109.30 (b)	\$ 31,824.81 (c)	
7	Depreciation				
8	Disposal of Vehicle	\$ (3,500.00)	\$ (1,191.46) (b)	\$ (1,218.86) (c)	
9	Other	\$ 5,997.68	\$ 106,490.39 (b)	\$ 108,939.67 (c)	
10					
11	Total Costs	\$ 625,129.28	\$ 648,443.13	\$ 749,113.48	
12					
13	Less Cap and Billed Out	\$ (218,095.94)	\$ (184,546.52) (b)	\$ (188,791.09) (c)	
14					
15	Total Transportation Expense	\$ 407,033.34	\$ 463,896.62	\$ 560,322.40	\$ 560,322.40
16	Less OCA Adjustment			\$ (73,983)	
17	Adjustment		\$ 56,863	\$ 22,443	
18					
19					

Description	2015	2016	2017	3 Year Average	
21					
22	Car Allowance	\$ -	\$ 15,800	\$ 15,800	\$ 10,533
23	Fuel	\$ 42,744	\$ 120,649	\$ 138,998	\$ 100,797
24	Maintenance & Repair	\$ 44,547	\$ 148,302	\$ 139,311	\$ 110,720
25	Payroll				
26	Insurance	\$ 25,527	\$ 41,799	\$ 24,060	\$ 30,462
27	Depreciation				
28	Disposal of Vehicle	\$ -	\$ -	\$ (3,500)	\$ (1,167)
29	Other	\$ 302,486	\$ 4,340	\$ 5,998	\$ 104,275
30					
31	Less Cap and Billed Out	\$ (98,761)	\$ (225,263)	\$ (218,096)	\$ (180,707)
32					
33	Inflation Rate:				
34	Future Test Year	2.13%			
35	Fully Projected Future Test Year	2.30%			
36					

37 **Reference:**
38 (a) Based on projected 2018 costs for Future Test Year and 2019 costs for Fully Projected Future Test Year.
39 (b) Based upon three year average with Future Test Year inflation rate.
40 (c) Based upon Future Test Year cost with Fully Projected Future Test Year inflation rate.

Line No.	Description	12 Months Ended 12/31/2017	Future Test Year	Fully Projected Future Test Year
1	Property Insurance and General Corporate Liability Insurance	\$ 4,732	\$ 4,832 (a)	\$ 4,935 (b)
2				
3	Total	<u>\$ 4,732</u>	<u>\$ 4,832</u>	<u>\$ 4,935</u>
4				
5	Adjustment		\$ 101	\$ 103
6				
7	Inflation Rate:			
8	Future Test Year	2.13%		
9	Fully Projected Future Test Year	2.30%		
10				
11	Reference Notes:			
12	(a) Based upon historic test year average with Future Test Year inflation rate.			
13	(b) Based upon Future Test Year cost with Fully Projected Future Test Year inflation rate.			

Line No.	Description	12 Months Ended 12/31/2017	Future Test Year	Fully Projected Future Test Year
1	Worker Compensation	\$ 102,384	\$ 108,228 (a)	\$ 110,717 (b)
2				
3	Total Worker Compensation	<u>\$ 102,384</u>	<u>\$ 108,228</u>	<u>\$ 110,717</u>
4				
5	Adjustment		\$ 5,844	\$ 2,489

Inflation Rate:

Fully Projected Future Test Year 2.30%

Reference Notes:

(a) The estimate is referenced from MFR III-23 response for future test year.

(b) The FPFTY is based on the inflation rate.

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Line No.	Description	12 Months Ended 12/31/2017	Future Test Year	Fully Projected Future Test Year
1	Advertising Expense	\$ 3,517	\$ 3,591.74 (a)	\$ 3,674 (b)
2				
3	Total Advertising Expense	<u>\$ 3,517</u>	<u>\$ 3,592</u>	<u>\$ 3,674</u>
4				
5	Adjustment		\$ 75	\$ 83
6				
7	Inflation Rate:			
8	Future Test Year	2.125%		
9	Fully Projected Future Test Year	2.300%		
10				
11	Reference Notes:			
12	(a) Based upon three year average with Future Test Year inflation rate.			
13	(b) Based upon Future Test Year cost with Fully Projected Future Test Year inflation rate.			

Line No.	Description	12 Months Ended 12/31/2017	Future Test Year	Fully Projected Future Test Year
1	Rate Case Expense Details:			
2	Legal Services			\$ 300,000
3	Customer Notifications, Transcripts & Misc.			15,000
4	Consulting Services:			
5	Rate of Return			30,000
6	Cost of Service			52,000
7	Depreciation Study/Revenue Requirement			170,000
8	Total Rate Case Expenses			<u>\$ 567,000</u>
9				
10	Current Amortization	<u>\$ 140,080</u>	<u>\$ 128,407</u>	
11	Amortize Rate Case Expenses Over 3 Years			<u>\$ 189,000</u>
12				
16	Total Regulatory Commission Expense	<u>\$ 140,080</u>	<u>\$ 128,407</u>	<u>\$ 189,000</u>
17				
18	Adjustment		\$ (11,674)	\$ 60,593

Line No.	Description	12 Months Ended 12/31/2017	Future Test Year	Fully Projected Future Test Year Under Present Rates 12/31/2019	Fully Projected Future Test Year Under Proposed Rates 12/31/2019
1	Regulatory Commission Expense:				
2	Regulatory Commission Expense	\$ 198,665	\$ 219,880	\$ 235,344	\$ 262,302
3					
4	Total Regulatory Commission Expense	<u>\$ 198,665</u>	<u>\$ 219,880</u>	<u>\$ 235,344</u>	<u>\$ 262,302</u>
5					
6	Adjustment		\$ 21,215	\$ 15,464	\$ 26,958
7					

	Per 2017 PAPUC Assesment	Future Test Year	Fully Projected Future Test Year	Fully Projected Future Test Year Under Proposed Rates 12/31/2019
11				
12	Regulatory Commission Expense:			
13				
14				
15	Taxable Revenue	\$ 43,660,297	\$ 43,652,995	\$ 52,075,000
16	Amount Assessed	219,917	219,880	262,302
17				
18				

Line No.	Description	12 Months Ended 12/31/2017	Future Test Year	Fully Projected Future Test Year Under Present Rates 12/31/2019	Fully Projected Future Test Year Under Proposed Rates 12/31/2019
1	Bad Debt Expense	\$ 155,640	\$ 155,342	\$ 166,266	\$ 185,312
2					
3	Total Bad Debt Expense	<u>\$ 155,640</u>	<u>\$ 155,342</u>	<u>\$ 166,266</u>	<u>\$ 185,312</u>
4					
5	Adjustment		\$ (298)	\$ 10,925	\$ 19,045
6					
7					

	2017	2016	2015
Historic Uncollectable Expense	\$ 155,640	\$ 130,887	\$ 158,160
Historic Test Year Revenues	44,745,760	44,226,330	37,320,528
Effective Uncollectable Rate	0.348%	0.296%	0.424%
Average 3 Year Uncollectable Rate	0.356%		

	Future Test Year	Fully Projected Future Test Year Under Present Rates 12/31/2019	Fully Projected Future Test Year Under Proposed Rates 12/31/2019
Revenues	\$ 43,652,995	\$ 46,722,995	\$ 52,075,000
Uncollectable Expense	\$ 155,342	\$ 166,266	\$ 185,312

Line No.	GL A/C #	Categories	12 Months Ended 12/31/2017	Future Test Year	Fully Projected Future Test Year
1	70251	FICA Taxes	\$ 560,626 (a)	\$ 570,687	\$ 616,674
2	70252	Federal Unemployment Taxes		4,074	4,200
3	70253	State Unemployment Taxes		23,188	23,905
4	91460	Worker compensation	102,384	108,228	110,717
5	91500	Employee Pension Cost	1,425,022	1,409,589	1,442,010
6	91550	Post Retirement Health Care Accrued	(457,246)	(530,724)	(542,931)
7	91700	Employee Group Health & Life	1,323,689	1,336,815	1,425,129
8	91800	Employee 401K	201,925	\$ 237,668	\$ 250,253
9	91850	Other Employee Benefits	13,129	\$ 13,408	\$ 13,716
10	91860	Other Awards	2,837	2,898	2,964
11		Total Costs	\$ 3,172,367	\$ 3,175,830	\$ 3,346,637
12					
13		Account 90950/90953 (A/G)			
14					
15		Fringe Benefits Capitalized/Transferred Out/Other Accounts	\$ (1,059,720)	\$ (1,042,994)	\$ (1,099,090)
16					
17		Total Fringe Benefits Transferred	<u>\$ (1,059,720)</u>	<u>\$ (1,042,994)</u>	<u>\$ (1,099,090)</u>
18					
19					
20					
21		Net Transferred In/Out % (3 Yr Avg)	-32.84%		
22					
23		Inflation Rate:			
24		Future Test Year	2.125%		
25		Fully Projected Future Test Year	2.300%		
26					
27		Reference Notes:			
28		(a) Includes Federal and State Unemployment Taxes.			
29					

Line No.	Description	12 Months Ended 12/31/2017	Future Test Year	Fully Projected Future Test Year
1	Office Expense and Utilities	\$ 446,337	\$ 419,541 (a)	\$ 429,190 (b)
2				
3	PA - DEP Annual Fees			\$ 111,704 (c)
4				
5	Total Office Expense and Utilities	<u>\$ 446,337</u>	<u>\$ 419,541</u>	<u>\$ 540,894</u>
6				
7		Office Expense and Utilities		
8	<u>Year</u>			
9	2015	\$ 445,512		
10	2016	340,584		
11	2017	446,337		
12				
13	3 Year Average	\$ 410,811		
14				
15	Inflation Rate:			
16	Future Test Year		2.125%	
17	Fully Projected Future Test Year		2.300%	
18				
19	Reference Notes:			
20	(a) Based upon three year average with Future Test Year inflation rate.			
21	(b) Based upon Future Test Year cost with Fully Projected Future Test Year inflation rate.			
	(c) The PA - DEP is changing its fee structure based on population in 2019. In 2017, the Company paid \$1,795.83 to the PA-DEP for the Act 109 Permit Fee. The estimate will increase \$111,704.17 in 2019 based on the Company's service area population and the DEP's new fee structure.			

Line No.	Description	12 Months Ended 12/31/2017	Future Test Year	Fully Projected Future Test Year
1	Postage and Air Freight	\$ 354,308	\$ 358,563 (a)	\$ 366,358 (b)
2				
3	Total Postage and Air Freight	<u>\$ 354,308</u>	<u>\$ 358,563</u>	<u>\$ 366,358</u>
4				
5	Adjustment		\$ 4,256	\$ 7,795
6				
7	<u>Year</u>	<u>Services Expense</u>		
8	2015	\$ 352,593		
9	2016	345,903		
10	2017	354,308		
11				
12	3 Year Average	\$ 350,934		
13				
14	<u>Postage Rate:</u>			
15	2017	\$ 0.46		
16	2018	0.47		
17	Percent Change	<u>2.17%</u>		
18				
19	<u>Reference Notes:</u>			
20	(a) Based upon three year average with the 2017 to 2018 postage rate percentage change.			
21	(b) Based upon Future Test Year cost with the 2017 to 2018 postage rate percentage change.			

Line No.	Description	12 Months Ended 12/31/2017	Future Test Year	Fully Projected Future Test Year
1	Other O&M	\$ 143,806	\$ 199,353	\$ 203,938
2				
3	Total Other O&M	<u>\$ 143,806</u>	<u>\$ 199,353</u>	<u>\$ 203,938</u>
4				
5	Adjustment		\$ 55,547	\$ 4,585
6				
7				
8				
9				
10	Year	Other O&M Expense		
11	2016	246,603		
12	2017	143,806		
13				
14	2 Year Average	\$ 195,204		
15				
16	Inflation Rate:			
17	Future Test Year		2.13%	
18	Fully Projected Future Test Year		2.30%	
19				
20	Reference Notes:			
21	(a) Based upon two year average with Future Test Year inflation rate.			
22	(b) Based upon Future Test Year cost with Fully Projected Future Test Year inflation rate.			

Suez Water Pennsylvania
Docket No. R-2018-3000834
Mahoning Acquisition Adjustments
Various Accounts

Exhibit No. CEH-2-R
Schedule-29
Adjustment No. 28
Page 1 of 1

Line No.	Description	12 Months Ended 12/31/2017	Future Test Year	Fully Projected Future Test Year
1	Purchased Water			\$ -
2				
3	Energy/Power			-
4				
5	Additional Subcontractor			-
6				
7	Total Mahoning Twp Acquisition Adjustments			<u>\$ -</u>

Line No.	Description			
1	Source: Blue Chip Financial Forecasts March 1, 2018			
2				
3	Consumer Price Index			
4				
5	Future Test Year:			
6		Annual		Quarter
7	1Q2018		3.10%	0.78%
8	2Q2018		-0.30%	-0.08%
9	3Q2018		2.00%	0.50%
10	4Q2018		3.70%	0.93%
11				
12	Inflation Adjustment:			<u>2.13%</u>
13				
14	Fully Projected Future Test Year:			
15		Annual		Quarter
16	1Q2019		2.30%	0.58%
17	2Q2019		2.30%	0.58%
18	3Q2019		2.30% (a)	0.58%
19	4Q2019		2.30% (a)	0.58%
20				
21	Inflation Adjustment:			<u>2.30%</u>
22				
23	Reference Notes:			
24	(a) Index not available, used 2Q of 2019 index.			

Line No.	Description	12 Months Ended 12/31/2017	Future Test Year	Fully Projected Future Test Year
1	Real Estate Taxes	\$ 270,553	\$ 311,025 (a)	\$ 318,178 (b)
2				
3	Total Real Estate Taxes	<u>\$ 270,553</u>	<u>\$ 311,025</u>	<u>\$ 318,178</u>
4				
5	Adjustment		\$ 40,472	\$ 7,154

Description	12 Months Ended 12/31/2017	Future Test Year	Fully Projected Future Test Year
PURTA	\$ 245,256	\$ 250,468	\$ 256,228
Less Refund	(34,000)	-	-
Property Tax	59,297	60,557	61,950
Total	<u>\$ 270,553</u>	<u>\$ 311,025</u>	<u>\$ 318,178</u>

Inflation Rate:

Future Test Year	2.13%
Fully Projected Future Test Year	2.30%

Reference Notes:

- (a) Based upon historic test year (less refund), with Future Test Year inflation rate.
- (b) Based upon Future Test Year cost with Fully Projected Future Test Year inflation rate.

	<u>2013</u>	<u>2014</u>
Realty Tax Equivalent	31,253,811	29,362,626
Total State Taxable Value	1,259,754,188	1,259,247,379
PURTA Millage Rate	32.4095	30.9176
Utility STV	8,809,262	9,008,241
Liability	285,504	278,513

Realty Tax Equivalent	-6.1%
Total State Taxable Value	0.0%
PURTA Millage Rate	-4.6%
Utility STV	2.3%
Liability	-2.4%

<u>2015</u>	<u>2016</u>
29,954,712	28,877,472
1,280,876,963	1,256,835,302
30.9861	30.5763
8,118,645	8,021,118
251,565	245,256
2.0%	-3.6%
1.7%	-1.9%
0.2%	-1.3%
-9.9%	-1.2%
-9.7%	-2.5%

Historical:

	<u>12-Months Ending 12/31/2017</u>	<u>Future Test Year</u>	<u>Fully Projected Future Test Year</u>
Total Water	\$ 560,626	597,949	644,779
Adjustment		\$ 37,323	\$ 46,830

Future Test Year

	<u>FICA</u>	<u>Medicare</u>	<u>FUI</u>	<u>SUI</u>	<u>Total</u>
Total Water	460,987	109,700	4,074	23,188	\$ 597,949

<u>FTY Tax Rates</u>	<u>FICA</u>	<u>Medicare</u>	<u>FUI</u>	<u>SUI</u>
2018	6.20%	1.45%	0.600%	2.3905%

Fully Projected Future Test Year

	<u>FICA</u>	<u>Medicare</u>	<u>FUI</u>	<u>SUI</u>	<u>Total</u>
Total Water	499,788	116,886	4,200	23,905	\$ 644,779

<u>FPFTY Tax Rates</u>	<u>FICA</u>	<u>Medicare</u>	<u>FUI</u>	<u>SUI</u>
2018	6.20%	1.45%	0.600%	2.3905%

Reference Notes:

(a) See workpaper CEH-2.2

Historical:

	<u>12-Months Ending 12/31/2017</u>	<u>Future Test Year</u>	<u>Fully Projected Future Test Year</u>
Total Water	\$ 7,361,991	9,004,241	9,566,371
Depreciation on CIAC/Advances		(950,910)	(950,910)
	<u>\$ 7,361,991</u>	<u>\$ 8,053,332</u>	<u>\$ 8,615,462</u>
Adjustment		\$ 691,340	\$ 562,130
Adjustment Reg Liability due to TCJA		\$ (264,891)	\$ (264,891)

Reference Notes:

(a) See Exhibits No. JJS-2, and JJS-3

Line No.	Description	Dec-17 Federal Income Tax Current Rates	Dec-17 State Income Tax Current Rates	Dec-18 Federal Income Tax Current Rates	Dec-18 State Income Tax Current Rates	Dec-18 Total Income Taxes	Dec-19 Federal Income Tax Current Rates	Dec-19 State Income Tax Current Rates	Dec-19 Total Income Taxes	Dec-19 Federal Income Tax Proposed Rates	Dec-19 State Income Tax Proposed Rates	Dec-19 Total Income Taxes Proposed Rates
1	Operating Income Before Income Taxes	\$ 20,648,526	\$ 20,648,526	\$ 17,543,397	\$ 17,543,397		\$ 18,988,405	\$ 18,988,405		\$ 24,294,407	\$ 24,294,407	
2	Interest Expense (1)	4,485,685	4,485,685	4,325,686	4,325,686		5,065,736	5,065,736		5,065,736	5,065,736	
3	State Income Tax	1,289,182		1,217,505			1,140,177			1,670,247		
4	Repair Adjustment on 2018 Additions			1,177,273	1,177,273							
5	Repair Adjustment on 2019 Additions						2,222,921	2,222,921		2,222,921	2,222,921	
9	Excess Of Tax Depreciation Over Book	3,042,455	3,258,114	(45,332)	165,210		388,034	598,577		388,034	598,577	
10	Taxable Income	<u>\$ 11,831,205</u>	<u>\$ 12,904,728</u>	<u>\$ 10,868,265</u>	<u>\$ 11,875,227</u>		<u>\$ 10,171,537</u>	<u>\$ 11,101,172</u>		<u>\$ 14,947,469</u>	<u>\$ 16,407,173</u>	
11	Income Tax Rate	35.00%	9.99%	21.00%	9.99%		21.00%	9.99%		21.00%	9.99%	
12	Pro Forma Income Tax : Current	4,140,922	1,289,182	2,282,336	1,186,335		2,136,023	1,109,007		3,138,969	1,639,077	
13	CTA Adjustment											
14	Amortization of Flow through Taxes			38,123	31,170		38,123	31,170		38,123	31,170	
15	Amortization of Income Tax Credit											
16	Total - Current Income Taxes	<u>\$ 4,140,922</u>	<u>\$ 1,289,182</u>	<u>\$ 2,320,458</u>	<u>\$ 1,217,505</u>		<u>\$ 2,174,145</u>	<u>\$ 1,140,177</u>		<u>\$ 3,177,091</u>	<u>\$ 1,670,247</u>	
	<u>Deferred Income Tax:</u>											
17	Repair Adjustment			\$ 1,177,273			2,222,921			2,222,921		
18	Less: State Deduction (Fr. Sch.6-6)											
19	Income Tax Rate			21.00%			21.00%			21.00%		
20	Deferred Income Tax - Repair Adjustment			247,227			466,813			466,813		
21	Excess Of Tax Depreciation Over Book			\$ (45,332)			\$ 388,034			\$ 388,034	\$ -	
22	Less: State Deferred Income Tax											
23	Income Tax Rate			21.00%	9.99%		21.00%	9.99%		21.00%	9.99%	
24	Deferred Income Tax - Tax/Book Deprec.			(9,520)	-		81,487	-		81,487	-	
25	Total Deferred Income Tax (L20+L24)			237,707	-		548,301	-		548,301	-	
26	Total Income Taxes (L16+L25)	<u>\$ 4,140,922</u>	<u>\$ 1,289,182</u>	<u>\$ 2,558,166</u>	<u>\$ 1,217,505</u>	<u>\$ 3,775,671</u>	<u>\$ 2,722,446</u>	<u>\$ 1,140,177</u>	<u>\$ 3,862,623</u>	<u>\$ 3,725,392</u>	<u>\$ 1,670,247</u>	<u>\$ 5,395,638</u>
	<u>Adjustment</u>											
27	Rate Base	\$ 190,763,193	\$ 190,763,193	\$ 203,023,803	\$ 203,023,803		\$ 237,757,639	\$ 237,757,639		\$ 237,757,639	\$ 237,757,639	
28	Weighted Cost Of Debt	2.13%	2.13%	2.13%	2.13%		2.13%	2.13%		2.13%	2.13%	
29	Interest Expense (1)	<u>\$ 4,064,458</u>	<u>\$ 4,064,458</u>	<u>\$ 4,325,686</u>	<u>\$ 4,325,686</u>		<u>\$ 5,065,736</u>	<u>\$ 5,065,736</u>		<u>\$ 5,065,736</u>	<u>\$ 5,065,736</u>	

SUEZ WATER PENNSYLVANIA
LABOR EXPENSE FOR FUTURE TEST YEAR ENDED DECEMBER 31, 2018

Line #	Employee ID #	Job Title	Office Location	Bargaining Exempt/Non-Exempt	Department	Hourly Rate	Annual Amount	Salary Increase	Incentive /STIP %	Incentive/STIP Amt	Overtime	Standby	Shift	Substitution	Total
1		Bargaining					2080	2.75%							
2	00000001005	Field Service Representative	PA Harrisburg	Bargaining	Customer Service Field/Meter	\$ 26.13	\$ 54,350	\$ 1,495	1.5%	\$ 838	\$ 4,801	\$ 1,310	\$ 30	\$ 313	\$ 63,136
3	00001177634	Field Service Representative	PA Harrisburg	Bargaining	Customer Service Field/Meter	23.51	48,901	1,345	1.5%	754	4,319	1,179	27	281	56,806
4	00001178403	Field Service Representative	PA Harrisburg	Bargaining	Customer Service Field/Meter	20.90	43,472	1,195	1.5%	670	3,840	1,048	24	250	50,499
5	00001176599	Field Service Representative	PA Harrisburg	Bargaining	Customer Service Field/Meter	26.13	54,350	1,495	1.5%	838	4,801	1,310	30	313	63,136
6	00001175239	Customer Serv Rep Office-Harr	PA Harrisburg	Bargaining	Customer Service Office	24.04	50,003	1,375	1.5%	771	7,153				59,302
7	00001178480	Customer Serv Rep Office-Harr	PA Harrisburg	Bargaining	Customer Service Office	19.23	39,998	1,100	1.5%	616	5,722				47,437
8	00001176579	Customer Serv Rep Office-Harr	PA Harrisburg	Bargaining	Customer Service Office	24.04	50,003	1,375	1.5%	771	7,153				59,302
9	00001177762	Customer Serv Rep Office-Harr	PA Harrisburg	Bargaining	Customer Service Office	24.04	50,003	1,375	1.5%	771	7,153				59,302
10	00001178715	Customer Serv Rep Office-Harr	PA Harrisburg	Bargaining	Customer Service Office	19.23	39,998	1,100	1.5%	616	5,722				47,437
11	00001173185	Customer Serv Rep Office-Harr	PA Harrisburg	Bargaining	Customer Service Office	24.04	50,003	1,375	1.5%	771	7,153				59,302
12	00001177689	Customer Serv Rep Office-Harr	PA Harrisburg	Bargaining	Customer Service Office	24.04	50,003	1,375	1.5%	771	7,153				59,302
13	00001175987	Customer Serv Rep Office-Harr	PA Harrisburg	Bargaining	Customer Service Office	24.04	50,003	1,375	1.5%	771	7,153				59,302
14	00000003025	Customer Serv Rep Office-Harr	PA Harrisburg	Bargaining	Customer Service Office	24.04	50,003	1,375	1.5%	771	7,153				59,302
15	00000000917	Maintenance Technician	PA Harrisburg	Bargaining	Maintenance	32.58	67,766	1,864	1.5%	1,044	5,223		36		75,934
16	00000000915	Maintenance Technician	PA Harrisburg	Bargaining	Maintenance	32.58	67,766	1,864	1.5%	1,044	5,223		36		75,934
17	00000001239	Maintenance Technician	PA Harrisburg	Bargaining	Maintenance	32.58	67,766	1,864	1.5%	1,044	5,223		36		75,934
18	00001170134	Electrician	PA Harrisburg	Bargaining	Maintenance	33.99	70,699	1,944	1.5%	1,090	5,449		38		79,220
19	00000001028	Maintenance Technician	PA Harrisburg	Bargaining	Production	32.58	67,766	1,864	1.5%	1,044	5,729	751	998		78,153
20	00001177000	Relief Operator-Harrisburg	PA Harrisburg	Bargaining	Production	30.78	64,022	1,761	1.5%	987	5,413	709	943		73,835
21	00001172861	Relief Operator-Harrisburg	PA Harrisburg	Bargaining	Production	32.24	67,059	1,844	1.5%	1,034	5,670	743	988		77,337
22	00000000939	Plant Operator-Harrisburg	PA Harrisburg	Bargaining	Production	31.78	66,102	1,818	1.5%	1,019	5,589	732	974		76,234
23	00000001027	Plant Operator-Bloomsburg	PA Bloomsburg	Bargaining	Production	29.83	62,046	1,706	1.5%	956	5,246	687	914		71,556
24	00001172907	Plant Operator-Harrisburg	PA Harrisburg	Bargaining	Production	31.78	66,102	1,818	1.5%	1,019	5,589	732	974		76,234
25	00001173622	Plant Operator-Bloomsburg	PA Bloomsburg	Bargaining	Production	30.83	64,126	1,763	1.5%	988	5,422	710	945		73,955
26	00001173364	Plant Operator-Bloomsburg	PA Bloomsburg	Bargaining	Production	30.83	64,126	1,763	1.5%	988	5,422	710	945		73,955
27	00000000941	Plant Operator-Harrisburg	PA Harrisburg	Bargaining	Production	31.78	66,102	1,818	1.5%	1,019	5,589	732	974		76,234
28	00001174942	Plant Operator-Bloomsburg	PA Bloomsburg	Bargaining	Production	30.83	64,126	1,763	1.5%	988	5,422	710	945		73,955
29	00000001233	Plant Operator-Harrisburg	PA Harrisburg	Bargaining	Production	31.78	66,102	1,818	1.5%	1,019	5,589	732	974		76,234
30	00001172936	Plant Operator-Harrisburg	PA Harrisburg	Bargaining	Production	31.78	66,102	1,818	1.5%	1,019	5,589	732	974		76,234
31	00000000925	Plant Operator-Harrisburg	PA Harrisburg	Bargaining	Production	31.78	66,102	1,818	1.5%	1,019	5,589	732	974		76,234
32	00000002925	Crew Chief-Bloomsburg	PA Bloomsburg	Bargaining	System Maint Distribution	30.75	63,960	1,759	1.5%	986	5,961	3,080	121	158	76,024
33	00000001029	Utility A Person -Bloomsburg	PA Bloomsburg	Bargaining	System Maint Distribution	29.47	61,298	1,686	1.5%	945	5,713	2,951	116	151	72,860
34	00001172842	Utility A Person -Bloomsburg	PA Bloomsburg	Bargaining	System Maint Distribution	29.47	61,298	1,686	1.5%	945	5,713	2,951	116	151	72,860
35	00000001035	Utility B Person -Bloomsburg	PA Bloomsburg	Bargaining	System Maint Distribution	25.91	53,893	1,482	1.5%	831	5,023	2,595	102	133	64,058
36	00000000972	Equipment Operator-Harrisburg	PA Harrisburg	Bargaining	System Maint Distribution	33.50	69,680	1,916	1.5%	1,074	6,494	3,355	132	172	82,823
37	00001170305	Utility Worker-Harrisburg	PA Harrisburg	Bargaining	System Maint Distribution	29.94	62,275	1,713	1.5%	960	5,804	2,999	118	153	74,022
38	00000001073	Utility Worker-Harrisburg	PA Harrisburg	Bargaining	System Maint Distribution	29.94	62,275	1,713	1.5%	960	5,804	2,999	118	153	74,022
39	00001172732	Utility Worker-Harrisburg	PA Harrisburg	Bargaining	System Maint Distribution	29.94	62,275	1,713	1.5%	960	5,804	2,999	118	153	74,022
40	00001170352	Utility Worker-Harrisburg	PA Harrisburg	Bargaining	System Maint Distribution	29.94	62,275	1,713	1.5%	960	5,804	2,999	118	153	74,022
41	00000000499	Equipment Operator-Harrisburg	PA Harrisburg	Bargaining	System Maint Distribution	33.50	69,680	1,916	1.5%	1,074	6,494	3,355	132	172	82,823
42	00001172001	Utility Worker-Harrisburg	PA Harrisburg	Bargaining	System Maint Distribution	29.94	62,275	1,713	1.5%	960	5,804	2,999	118	153	74,022
43	00001176622	Utility Worker-Harrisburg	PA Harrisburg	Bargaining	System Maint Distribution	29.94	62,275	1,713	1.5%	960	5,804	2,999	118	153	74,022
44	00001172012	Utility Worker-Harrisburg	PA Harrisburg	Bargaining	System Maint Distribution	29.94	62,275	1,713	1.5%	960	5,804	2,999	118	153	74,022
45	00000001015	Leader-Harrisburg	PA Harrisburg	Bargaining	System Maint Distribution	34.64	72,051	1,981	1.5%	1,110	6,715	3,469	137	177	85,642
46	00000001164	Leader-Harrisburg	PA Harrisburg	Bargaining	System Maint Distribution	34.64	72,051	1,981	1.5%	1,110	6,715	3,469	137	177	85,642
47	00000000980	Field Service Representative	PA Harrisburg	Bargaining	System Maint Distribution/Meter	27.20	56,576	1,556	1.5%	872	8,053	3,456	139	446	71,097
48	00001172754	Utility Worker-Harrisburg	PA Harrisburg	Bargaining	System Maint Distribution	29.94	62,275	1,713	1.5%	960	5,804	2,999	118	153	74,022
49	00001176303	Utility Worker-Harrisburg	PA Harrisburg	Bargaining	System Maint Distribution	29.94	62,275	1,713	1.5%	960	5,804	2,999	118	153	74,022
50	00000000924	Utility Worker-Harrisburg	PA Harrisburg	Bargaining	System Maint Distribution	29.94	62,275	1,713	1.5%	960	5,804	2,999	118	153	74,022
51	00000001487	Leader-Harrisburg	PA Harrisburg	Bargaining	System Maint Distribution	34.64	72,051	1,981	1.5%	1,110	6,715	3,469	137	177	85,642
52		Subtotal					3,030,269	83,332		46,704	293,889	76,394	15,228	4,605	3,550,421
53															
54	Vacancies:	None													
55		Subtotal													
56															
57	Projected New Hires:														
58	start 1/1/2019	Utility B Person	PA Bloomsburg	Bargaining	System Maint Distribution										
59	start 1/1/2019	Electrician/SCADA	PA Bloomsburg	Bargaining	Maintenance										
60		Subtotal													
		Total Bargaining					3,030,269	83,332		46,704	293,889	76,394	15,228	4,605	3,550,421

Line #	Employee ID #	Job Title	Office Location	Bargaining Exempt/Non-Exempt	Department	Hourly Rate	Annual Amount	Salary Increase	Incentive /STIP %	Incentive/STIP Amt	Overtime	Standby	Shift	Substitution	Total
60	Non-Exempt/Exempt						2080	3.00%							
61	0000000988	Superintendent	PA Bloomsburg	Exempt	Administration - General	\$ 42.01	\$ 87,376	\$ 2,621	10%	\$ 9,000					\$ 98,997
62	00001178714	Manager Water Quality	PA Harrisburg	Exempt	Administration - General	42.07	87,500	2,625	15%	13,519					103,644
63	00001176983	NRW Specialist	PA Harrisburg	Exempt	Administration - General	26.10	54,281	1,628	5%	2,795					58,705
64	00001173794	Water Quality Specialist	PA Harrisburg	Exempt	Administration - General	31.73	65,992	1,980	5%	3,399					71,370
65	00001177800	Data & Asset Mgmt Specialist	PA Harrisburg	Exempt	Administration - General	32.09	66,755	2,003	5%	3,438					72,196
66	00000009986	General Manager	PA Harrisburg	Exempt	Administration - General	96.76	201,254	6,038	40%	82,917					290,208
67	00001175835	Director Operations	PA Harrisburg	Exempt	Administration - General	67.83	141,081	4,232	20%	29,063					174,376
68	00001173315	Administrative Coordinator	PA Harrisburg	Exempt	Administration - General	32.98	68,590	2,058	5%	3,532					74,180
69	00001173428	Senior Engineer	PA Harrisburg	Exempt	Administration - General	51.57	107,262	3,218	15%	16,572					127,052
70	00001177671	Manager Env Health & Safety	PA Harrisburg	Exempt	Administration - General	43.86	91,228	2,737	15%	14,095					108,060
71	00001173659	Water Quality Specialist	PA Dallas	Exempt	Administration - General	33.31	69,294	2,079	5%	3,569					74,941
72	00001172860	Public Affairs Mgr	PA Harrisburg	Exempt	Communications	47.37	98,524	2,956	15%	15,222					116,702
73	00001178243	Supervisor Customer Service	PA Harrisburg	Exempt	Customer Service Office	36.06	75,000	2,250	5%	3,863					81,113
74	00001176511	Manager Customer Service	PA Harrisburg	Exempt	Customer Service Office	48.66	101,216	3,036	15%	15,638					119,890
75	00001176098	GIS Lead	PA Harrisburg	Exempt	Engineering	28.17	58,602	1,758	5%	3,018					63,378
76	00001178264	Project Manager Engineering	PA Harrisburg	Exempt	Engineering	36.06	75,000	2,250	5%	3,863					81,113
77	00001170382	Manager Engineering	PA Harrisburg	Exempt	Engineering	51.74	107,623	3,229	15%	16,628					127,479
78	00001178568	Engineer	PA Harrisburg	Exempt	Engineering	32.21	67,000	2,010	5%	3,450					72,460
79	00001178748	Construction Coordinator	PA Harrisburg	Exempt	Engineering	35.10	73,008	2,190	5%	3,760					78,958
80	00001178494	Financial Analyst	PA Harrisburg	Exempt	Financial Planning	30.29	63,000	1,890	5%	3,245					68,135
81	00001178271	Data Analyst	PA Harrisburg	Exempt	Financial Planning	24.04	50,000	1,500	5%	2,575					54,075
82	00001173787	Director Finance	PA Harrisburg	Exempt	Financial Planning	55.21	114,845	3,445	20%	23,658					141,948
83	00001174828	Assistant Manager Operations	PA Harrisburg	Exempt	Production	39.12	81,379	2,441	10%	8,382					92,202
84	00001175056	Superintendent Production	PA Harrisburg	Exempt	Production	44.26	92,059	2,762	10%	9,482					104,303
85	00001173102	Automated System Spec	PA Harrisburg	Exempt	Production	41.13	85,540	2,566	10%	8,811					96,917
86	00001176485	Assistant Supervisor Prod/T&D	PA Bloomsburg	Exempt	Production	33.65	70,000	2,100	3%	2,163					74,263
87	00000000197	Superintendent Production	PA Bloomsburg	Exempt	Production	36.32	75,553	2,267	5%	3,891					81,711
88	00001176419	Superintendent T&D	PA Harrisburg	Exempt	System Maint Distribution	41.76	86,859	2,606	10%	8,946					98,411
89	00000000933	Non-Revenue Water Technician	PA Harrisburg	Non-exempt	Administration - General	32.77	68,162	2,045	3%	2,106	8,829				81,141
90	00001175840	Admin Asst	PA Harrisburg	Non-exempt	Engineering	24.60	51,168	1,535	3%	1,581	5,187				59,471
91	00001173427	Accounting Rep	PA Harrisburg	Non-exempt	Financial Planning	25.41	52,853	1,586	3%	1,633	5,336				61,407
92	00000000967	Lead Operator	PA Mechanicsburg	Non-exempt	Production	35.76	74,381	2,231	3%	2,298	6,289				85,199
93	00001172494	Office Asst (Part Time)	PA Harrisburg	Non-exempt	Production	19.56	40,685	1,119	3%	1,254	3,440				46,498
94	00000000955	Operator	PA Mechanicsburg	Non-exempt	Production	32.10	66,768	2,003	3%	2,063	5,645				76,479
95	00000000973	Operator	PA Mechanicsburg	Non-exempt	Production	32.10	66,768	2,003	3%	2,063	5,645				76,479
96	00001173628	Utility Person	PA Mechanicsburg	Non-exempt	System Maint Distribution	22.40	46,592	1,398	3%	1,440	4,342				53,772
97	00001176343	Utility Person	PA Mechanicsburg	Non-exempt	System Maint Distribution	29.46	61,277	1,838	3%	1,893	5,711				70,720
98	00001175781	Utility Person	PA Mechanicsburg	Non-exempt	System Maint Distribution	29.46	61,277	1,838	3%	1,893	5,711				70,720
99	00001175433	Utility Person	PA Mechanicsburg	Non-exempt	System Maint Distribution	29.46	61,277	1,838	3%	1,893	5,711				70,720
100	00000000931	Utility Person	PA Mechanicsburg	Non-exempt	System Maint Distribution	29.46	61,277	1,838	3%	1,893	5,711				70,720
101	00001172493	Office Asst	PA Harrisburg	Non-exempt	System Maint Distribution	21.24	44,179	1,325	3%	1,365	4,117				50,987
102	00001174804	Foreperson	PA Harrisburg	Non-exempt	System Maint Distribution	34.28	71,302	2,139	3%	2,203	6,645				82,290
103	00001175450	Field Services Tech	PA Dallas	Non-exempt	System Maint Distribution/Meter	24.43	50,814	1,524	3%	1,570	7,233				61,142
104	00001172919	Field Services Tech	PA Dallas	Non-exempt	System Maint Distribution/Meter	27.27	56,722	1,702	3%	1,753	8,074				68,249
105	00001178112	Field Services Tech	PA Dallas	Non-exempt	System Maint Distribution/Meter	24.21	50,357	1,511	3%	1,556	7,168				60,591
106	00000001014	Foreperson	PA Dallas	Non-exempt	System Maint Distribution	34.82	72,426	2,173	3%	2,238	6,750				83,586
107		Subtotal					3,474,104	104,121		351,189	107,543				4,036,957
108															
109	Vacancies:	None													
110		Subtotal													
111															
112	Projected New Hires:														
113	start 1/1/2019	Admin Assistant Bloom (Part Time)	PA Bloomsburg	Non-exempt	Admin Gen										
114	start 1/1/2019	Supervisor T&D	PA Harrisburg	Exempt	SystMaintConst										
115	start 1/1/2019	Supervisor Prod	PA Harrisburg	Exempt	Production										
116		Subtotal													
117															
118		Total Exempt/Non-Exempt					3,474,104	104,121		351,189	107,543				4,036,957
119															
120		Subtotal Bargaining/Exempt/Non-Exempt					6,504,373	187,454		397,893	401,432	76,394	15,228	4,605	7,587,378
121															
122		Labor Capitalized @													-32.84%
123															(2,491,810)
124		Total Payroll - Future Test Year					6,504,373	187,454		397,893	401,432	76,394	15,228	4,605	5,095,561

SUEZ WATER PENNSYLVANIA
 LABOR EXPENSE FOR FULLY PROJECTED FUTURE TEST YEAR ENDED DECEMBER 31, 2019

Line #	Employee ID #	Job Title	Office Location	Bargaining Exempt/Non-Exempt	Department	Hourly Rate	Annual Amount	Salary Increase	Incentive/STIP %	Incentive/STIP Amt	Overtime	Standby	Shift	Substitution	Total	
1							2080	2.75%								
2	0000001005	Field Service Representative	PA Harrisburg	Bargaining	Customer Service Field/Meter	\$ 26.85	\$ 55,845	\$ 1,536	1.5%	\$ 861	\$ 4,942	\$ 1,349	\$ 31	\$ 322	\$ 64,886	
3	00001177634	Field Service Representative	PA Harrisburg	Bargaining	Customer Service Field/Meter	24.16	50,246	1,382	1.5%	774	4,447	1,214	28	290	58,380	
4	00001178403	Field Service Representative	PA Harrisburg	Bargaining	Customer Service Field/Meter	21.47	44,667	1,228	1.5%	688	3,953	1,079	25	258	51,899	
5	00001176599	Field Service Representative	PA Harrisburg	Bargaining	Customer Service Field/Meter	26.85	55,845	1,536	1.5%	861	4,942	1,349	31	322	64,886	
6	00001175239	Customer Serv Rep Office-Harr	PA Harrisburg	Bargaining	Customer Service Office	24.70	51,378	1,413	1.5%	792	7,368				60,951	
7	00001178480	Customer Serv Rep Office-Harr	PA Harrisburg	Bargaining	Customer Service Office	19.76	41,098	1,130	1.5%	633	5,894				48,756	
8	00001176579	Customer Serv Rep Office-Harr	PA Harrisburg	Bargaining	Customer Service Office	24.70	51,378	1,413	1.5%	792	7,368				60,951	
9	00001177762	Customer Serv Rep Office-Harr	PA Harrisburg	Bargaining	Customer Service Office	24.70	51,378	1,413	1.5%	792	7,368				60,951	
10	00001178715	Customer Serv Rep Office-Harr	PA Harrisburg	Bargaining	Customer Service Office	19.76	41,098	1,130	1.5%	633	5,894				48,756	
11	00001173185	Customer Serv Rep Office-Harr	PA Harrisburg	Bargaining	Customer Service Office	24.70	51,378	1,413	1.5%	792	7,368				60,951	
12	00001177669	Customer Serv Rep Office-Harr	PA Harrisburg	Bargaining	Customer Service Office	24.70	51,378	1,413	1.5%	792	7,368				60,951	
13	00001175987	Customer Serv Rep Office-Harr	PA Harrisburg	Bargaining	Customer Service Office	24.70	51,378	1,413	1.5%	792	7,368				60,951	
14	00000003025	Customer Serv Rep Office-Harr	PA Harrisburg	Bargaining	Customer Service Office	24.70	51,378	1,413	1.5%	792	7,368				60,951	
15	00000000917	Maintenance Technician	PA Harrisburg	Bargaining	Maintenance	33.48	69,630	1,915	1.5%	1,073	4,364		30		77,013	
16	00000000915	Maintenance Technician	PA Harrisburg	Bargaining	Maintenance	33.48	69,630	1,915	1.5%	1,073	4,364		30		77,013	
17	00000001239	Maintenance Technician	PA Harrisburg	Bargaining	Maintenance	33.48	69,630	1,915	1.5%	1,073	4,364		30		77,013	
18	00001170134	Electrician	PA Harrisburg	Bargaining	Maintenance	34.92	72,643	1,998	1.5%	1,120	4,553		31		80,346	
19	start 1/1/2019	Electrician/SCADA	PA Bloomsburg	Bargaining	Maintenance	31.50	65,520	1,802	1.5%	1,010	4,107				72,467	
20	00000001028	Maintenance Technician	PA Harrisburg	Bargaining	Production	33.48	69,630	1,915	1.5%	1,073	5,899	773		1,028	80,318	
21	00001177000	Relief Operator-Harrisburg	PA Harrisburg	Bargaining	Production	31.63	65,783	1,809	1.5%	1,014	5,573	730			75,880	
22	00001172861	Relief Operator-Harrisburg	PA Harrisburg	Bargaining	Production	33.13	68,903	1,895	1.5%	1,062	5,837	765		1,017	79,480	
23	00000000939	Plant Operator-Harrisburg	PA Harrisburg	Bargaining	Production	32.65	67,920	1,868	1.5%	1,047	5,754	754		1,003	78,346	
24	00000001027	Plant Operator-Bloomsburg	PA Bloomsburg	Bargaining	Production	30.65	63,753	1,753	1.5%	983	5,401	708		941	73,538	
25	00001172607	Plant Operator-Harrisburg	PA Harrisburg	Bargaining	Production	32.65	67,920	1,868	1.5%	1,047	5,754	754		1,003	78,346	
26	00001173622	Plant Operator-Bloomsburg	PA Bloomsburg	Bargaining	Production	31.68	65,890	1,812	1.5%	1,016	5,582	732		973	76,004	
27	00001173364	Plant Operator-Bloomsburg	PA Bloomsburg	Bargaining	Production	31.68	65,890	1,812	1.5%	1,016	5,582	732		973	76,004	
28	00000000941	Plant Operator-Harrisburg	PA Harrisburg	Bargaining	Production	32.65	67,920	1,868	1.5%	1,047	5,754	754		1,003	78,346	
29	00001174942	Plant Operator-Bloomsburg	PA Bloomsburg	Bargaining	Production	31.68	65,890	1,812	1.5%	1,016	5,582	732		973	76,004	
30	00000001233	Plant Operator-Harrisburg	PA Harrisburg	Bargaining	Production	32.65	67,920	1,868	1.5%	1,047	5,754	754		1,003	78,346	
31	00001172936	Plant Operator-Harrisburg	PA Harrisburg	Bargaining	Production	32.65	67,920	1,868	1.5%	1,047	5,754	754		1,003	78,346	
32	00000000925	Plant Operator-Harrisburg	PA Harrisburg	Bargaining	Production	32.65	67,920	1,868	1.5%	1,047	5,754	754		1,003	78,346	
33	00000002925	Crew Chief-Bloomsburg	PA Bloomsburg	Bargaining	System Maint Distribution	31.60	65,719	1,807	1.5%	1,013	6,135	3,172		125	162	78,133
34	00000001029	Utility A Person-Bloomsburg	PA Bloomsburg	Bargaining	System Maint Distribution	30.28	62,983	1,732	1.5%	971	5,880	3,040		120	156	74,881
35	00001172842	Utility A Person-Bloomsburg	PA Bloomsburg	Bargaining	System Maint Distribution	30.28	62,983	1,732	1.5%	971	5,880	3,040		120	156	74,881
36	00000001035	Utility B Person-Bloomsburg	PA Bloomsburg	Bargaining	System Maint Distribution	26.62	55,375	1,523	1.5%	853	5,169	2,673		105	137	65,835
37	00000000972	Equipment Operator-Harrisburg	PA Harrisburg	Bargaining	System Maint Distribution	34.42	71,596	1,969	1.5%	1,103	6,684	3,456		136	177	85,121
38	00001170305	Utility Worker-Harrisburg	PA Harrisburg	Bargaining	System Maint Distribution	30.76	63,988	1,760	1.5%	986	5,973	3,088		122	158	76,075
39	00000001073	Utility Worker-Harrisburg	PA Harrisburg	Bargaining	System Maint Distribution	30.76	63,988	1,760	1.5%	986	5,973	3,088		122	158	76,075
40	00001172732	Utility Worker-Harrisburg	PA Harrisburg	Bargaining	System Maint Distribution	30.76	63,988	1,760	1.5%	986	5,973	3,088		122	158	76,075
41	00001170352	Utility Worker-Harrisburg	PA Harrisburg	Bargaining	System Maint Distribution	30.76	63,988	1,760	1.5%	986	5,973	3,088		122	158	76,075
42	00000000499	Equipment Operator-Harrisburg	PA Harrisburg	Bargaining	System Maint Distribution	34.42	71,596	1,969	1.5%	1,103	6,684	3,456		136	177	85,121
43	00001172001	Utility Worker-Harrisburg	PA Harrisburg	Bargaining	System Maint Distribution	30.76	63,988	1,760	1.5%	986	5,973	3,088		122	158	76,075
44	00001178622	Utility Worker-Harrisburg	PA Harrisburg	Bargaining	System Maint Distribution	30.76	63,988	1,760	1.5%	986	5,973	3,088		122	158	76,075
45	00001172012	Utility Worker-Harrisburg	PA Harrisburg	Bargaining	System Maint Distribution	30.76	63,988	1,760	1.5%	986	5,973	3,088		122	158	76,075
46	00000001015	Leader-Harrisburg	PA Harrisburg	Bargaining	System Maint Distribution	35.59	74,033	2,036	1.5%	1,141	6,911	3,573		141	183	88,018
47	00000001164	Leader-Harrisburg	PA Harrisburg	Bargaining	System Maint Distribution	35.59	74,033	2,036	1.5%	1,141	6,911	3,573		141	183	88,018
48	00000000980	Field Service Representative	PA Harrisburg	Bargaining	System Maint Distribution/Meter	27.95	58,132	1,599	1.5%	896	8,287	3,559		143	459	73,075
49	00001172754	Utility Worker-Harrisburg	PA Harrisburg	Bargaining	System Maint Distribution	30.76	63,988	1,760	1.5%	986	5,973	3,088		122	158	76,075
50	00001176303	Utility Worker-Harrisburg	PA Harrisburg	Bargaining	System Maint Distribution	30.76	63,988	1,760	1.5%	986	5,973	3,088		122	158	76,075
51	00000000924	Utility Worker-Harrisburg	PA Harrisburg	Bargaining	System Maint Distribution	30.76	63,988	1,760	1.5%	986	5,973	3,088		122	158	76,075
52	00000001467	Leader-Harrisburg	PA Harrisburg	Bargaining	System Maint Distribution	35.59	74,033	2,036	1.5%	1,141	6,911	3,573		141	183	88,018
53	start 1/1/2019	Utility B Person	PA Bloomsburg	Bargaining	System Maint Distribution											
54		Subtotal					3,179,121	87,426		48,998	302,560	78,686		15,685	4,743	3,717,219
55																
56	Vacancies:	None														
57		Subtotal														
58																
59	Projected New Hires:	None														
60		Subtotal														
		Total Bargaining					3,179,121	87,426		48,998	302,560	78,686		15,685	4,743	3,717,219

Line #	Employee ID #	Job Title	Office Location	Bargaining Exempt/Non- Exempt	Department	Hourly Rate	Annual Amount 2080	Salary Increase 3.00%	Incentive/ STIP %	Incentive/STIP Amt	Overtime	Standby	Shift	Substitution	Total
60	Non-Exempt/Exempt														
61	0000000986	Superintendent	PA Bloomsburg	Exempt	Administration - General	\$ 43.27	\$ 89,997	\$ 2,700	10%	\$ 9,270					\$ 101,967
62	00001178714	Manager Water Quality	PA Harrisburg	Exempt	Administration - General	43.33	90,125	2,704	15%	13,924					106,753
63	00001176883	NRW Specialist	PA Harrisburg	Exempt	Administration - General	26.88	55,909	1,677	5%	2,879					60,466
64	00001173794	Water Quality Specialist	PA Harrisburg	Exempt	Administration - General	32.68	67,972	2,039	5%	3,501					73,511
65	00001177800	Data & Asset Mgmt Specialist	PA Harrisburg	Exempt	Administration - General	33.06	68,758	2,063	5%	3,541					74,362
66	0000000966	General Manager	PA Harrisburg	Exempt	Administration - General	99.66	207,292	6,219	40%	85,404					298,914
67	00001175835	Director Operations	PA Harrisburg	Exempt	Administration - General	69.86	145,313	4,959	20%	29,935					179,607
68	00001173315	Administrative Coordinator	PA Harrisburg	Exempt	Administration - General	33.97	70,648	2,119	5%	3,638					76,406
69	00001173428	Senior Engineer	PA Harrisburg	Exempt	Administration - General	53.12	110,480	3,314	15%	17,069					130,863
70	00001177671	Manager Env Health & Safety	PA Harrisburg	Exempt	Administration - General	45.18	93,965	2,819	15%	14,518					111,301
71	00001173659	Water Quality Specialist	PA Dallas	Exempt	Administration - General	34.31	71,373	2,141	5%	3,676					77,190
72	00001172860	Public Affairs Mgr	PA Harrisburg	Exempt	Communications	48.79	101,480	3,044	15%	15,679					120,203
73	00001178243	Supervisor Customer Service	PA Harrisburg	Exempt	Customer Service Office	37.14	77,250	2,318	5%	3,978					83,546
74	00001178511	Manager Customer Service	PA Harrisburg	Exempt	Customer Service Office	50.12	104,252	3,128	15%	16,107					123,487
75	00001176098	GIS Lead	PA Harrisburg	Exempt	Engineering	29.02	60,360	1,811	5%	3,109					65,279
76	00001178264	Project Manager Engineering	PA Harrisburg	Exempt	Engineering	37.14	77,250	2,318	5%	3,978					83,546
77	00001170362	Manager Engineering	PA Harrisburg	Exempt	Engineering	53.29	110,852	3,326	15%	17,127					131,304
78	00001178568	Engineer	PA Harrisburg	Exempt	Engineering	33.18	69,010	2,070	5%	3,554					74,634
79	00001178748	Construction Coordinator	PA Harrisburg	Exempt	Engineering	36.15	75,198	2,256	5%	3,873					81,327
80	00001178494	Financial Analyst	PA Harrisburg	Exempt	Financial Planning	31.20	64,890	1,947	5%	3,342					70,179
81	00001178271	Data Analyst	PA Harrisburg	Exempt	Financial Planning	24.76	51,500	1,545	5%	2,652					55,697
82	00001173787	Director Finance	PA Harrisburg	Exempt	Financial Planning	56.87	118,290	3,549	20%	24,368					146,207
83	00001174828	Assistant Manager Operations	PA Harrisburg	Exempt	Production	40.30	83,820	2,515	10%	8,633					94,968
84	00001175056	Superintendent Production	PA Harrisburg	Exempt	Production	45.59	94,821	2,845	10%	9,767					107,432
85	00001173102	Automated System Spec	PA Harrisburg	Exempt	Production	42.36	88,106	2,643	10%	9,075					99,824
86	00001176485	Assistant Supervisor Prod/T&D	PA Bloomsburg	Exempt	Production	34.66	72,100	2,163	3%	2,228					76,491
87	0000000187	Superintendent Production	PA Bloomsburg	Exempt	Production	37.41	77,820	2,335	5%	4,008					84,162
88	start 1/1/2019	Supervisor Prod	PA Harrisburg	Exempt	Production	36.05	74,984	2,250	5%	3,749					80,983
89	00001178419	Superintendent T&D	PA Harrisburg	Exempt	System Maint Distribution	43.01	89,465	2,684	10%	9,215					101,364
90	start 1/1/2019	Supervisor T&D	PA Harrisburg	Exempt	System Maint Distribution	38.46	79,997	2,400	5%	4,000					86,397
91	0000000933	Non-Revenue Water Technician	PA Harrisburg	Non-exempt	Administration - General	33.75	70,206	2,106	3%	2,169	6,706				81,188
92	start 1/1/2019	Admin Assistant Bloom (Part Time)	PA Bloomsburg	Non-exempt	Administration - General	24.03	24,991	687	3%	750					28,815
93	00001175840	Admin Asst	PA Harrisburg	Non-exempt	Engineering	25.34	52,703	1,581	3%	1,629	5,342				61,255
94	00001173427	Accounting Rep	PA Harrisburg	Non-exempt	Financial Planning	26.17	54,438	1,633	3%	1,682	5,496				63,250
95	0000000967	Lead Operator	PA Mechanicsburg	Non-exempt	Production	36.83	76,612	2,298	3%	2,367	6,490				87,768
96	00001172494	Office Asst (Part Time)	PA Harrisburg	Non-exempt	Production	20.10	41,804	1,150	3%	1,289	3,541				47,783
97	0000000955	Operator	PA Mechanicsburg	Non-exempt	Production	33.06	68,771	2,063	3%	2,125	5,826				78,785
98	0000000973	Operator	PA Mechanicsburg	Non-exempt	Production	33.06	68,771	2,063	3%	2,125	5,826				78,785
99	00001173628	Utility Person	PA Mechanicsburg	Non-exempt	System Maint Distribution	23.07	47,990	1,440	3%	1,483	4,480				55,392
100	00001176343	Utility Person	PA Mechanicsburg	Non-exempt	System Maint Distribution	30.34	63,115	1,893	3%	1,950	5,892				72,851
101	00001175781	Utility Person	PA Mechanicsburg	Non-exempt	System Maint Distribution	30.34	63,115	1,893	3%	1,950	5,892				72,851
102	00001175433	Utility Person	PA Mechanicsburg	Non-exempt	System Maint Distribution	30.34	63,115	1,893	3%	1,950	5,892				72,851
103	0000000931	Utility Person	PA Mechanicsburg	Non-exempt	System Maint Distribution	30.34	63,115	1,893	3%	1,950	5,892				72,851
104	00001172493	Office Asst	PA Harrisburg	Non-exempt	System Maint Distribution	21.88	45,505	1,365	3%	1,406	4,248				52,524
105	00001174804	Foreperson	PA Harrisburg	Non-exempt	System Maint Distribution	35.31	73,441	2,209	3%	2,269	6,856				84,770
106	00001175450	Field Services Tech	PA Dallas	Non-exempt	System Maint Distribution/Meter	25.16	52,339	1,570	3%	1,617	7,461				62,988
107	00001172919	Field Services Tech	PA Dallas	Non-exempt	System Maint Distribution/Meter	28.09	58,423	1,753	3%	1,805	8,329				70,310
108	00001178112	Field Services Tech	PA Dallas	Non-exempt	System Maint Distribution/Meter	24.94	51,868	1,556	3%	1,603	7,394				62,421
109	00000001014	Foreperson	PA Dallas	Non-exempt	System Maint Distribution	35.86	74,598	2,238	3%	2,305	6,964				86,105
110		Subtotal					3,758,197	112,579		370,220	110,915				4,351,911
111															
112	Vacancies:	None													
113		Subtotal													
114															
115	Projected New Hires:	None													
116		Subtotal													
117															
118		Total Exempt/Non-Exempt					3,758,197	112,579		370,220	110,915				4,351,911
119															
120		Subtotal Bargaining/Exempt/Non-Exempt					6,937,319	200,005		419,219	413,475	78,686	15,685	4,743	8,069,130
121															
122		Labor Capitalized @				-32.84%									(2,650,033)
123															
124		Total Payroll - Future Test Year					6,937,319	200,005		419,219	413,475	78,686	15,685	4,743	5,419,097

SUEZ WATER PENNSYLVANIA
EMPLOYEE PAYROLL FOR FUTURE TEST YEAR ENDED DECEMBER 31, 2018

	Calendar Year 12/31/2015	Calendar Year 12/31/2016	Calendar Year 12/31/2017	Future Test Year 3 Yr. Avg.
Overtime Expense				
Overtime (\$)	\$ 417,672	\$ 398,920	\$ 352,627	\$ 389,739
Department:				
Administration - General	13,367	9,185	5,023	9,192
Capital Management	4,878	4,158	3,696	4,244
Customer Service Field	4,503	13,053	1,925	6,494
Customer Service Office	34,285	49,301	51,379	44,988
Financial Planning	6,038	3,544	3,458	4,347
Maintenance	21,781	24,031	22,535	22,782
Meter Field	14,786	21,579	8,962	15,109
Meter Reading	7,692	-	-	2,564
Production	91,607	110,963	92,289	98,286
System Maint Distribution	218,735	163,105	163,360	181,733
Overtime (\$)	9,701	9,298	7,897	8,965
Department:				
Administration - General	293.00	195.00	103.50	197.17
Capital Management	131.00	115.50	101.00	115.83
Customer Service Field	132.50	339.50	56.00	176.00
Customer Service Office	1,022.00	1,576.70	1,522.75	1,373.82
Financial Planning	169.25	96.75	91.50	119.17
Maintenance	468.00	499.00	448.00	471.67
Meter Field	400.00	543.50	220.00	387.83
Meter Reading	204.50	-	-	68.17
Production	1,997.00	2,332.00	1,893.50	2,074.17
System Maint Distribution	4,883.25	3,599.75	3,461.00	3,981.33
3 Year Avg Overtime Hourly Rate (Historical - 2015,2016,2017)				\$ 43.47
FTY Overtime Hourly Rate @ 3% Increase to Historical Overtime Rate				\$ 44.78
FTY Overtime \$ By Department				\$ 401,432
Department:				
Administration - General				8,829
Capital Management				5,187
Customer Service Field				7,881
Customer Service Office				61,515
Financial Planning				5,336
Maintenance				21,120
Meter Field				17,366
Meter Reading				3,052
Production				92,875
System Maint Distribution				178,272

SUEZ WATER PENNSYLVANIA
EMPLOYEE PAYROLL FOR FUTURE TEST YEAR ENDED DECEMBER 31, 2018

	Calendar Year 12/31/2015	Calendar Year 12/31/2016	Calendar Year 12/31/2017	Future Test Year 3 Yr. Avg.
Standby Expense				
Standby (\$)	\$ 65,700	\$ 68,874	\$ 87,933	\$ 74,169
Department:				
Customer Service Field	677	5,093	-	1,923
Meter Field	2,054	2,948	752	1,918
Meter Reading	3,029	-	-	1,010
Production	4,782	3,958	19,638	9,459
System Maint Distribution	55,158	56,875	67,543	59,859
Standby (Hours)	2,450	2,502	3,007	2,653
Department:				
Customer Service Field	27.50	206.50	-	78.00
Meter Field	83.50	113.50	28.00	75.00
Meter Reading	122.00	-	-	40.67
Production	184.50	147.00	649.00	326.83
System Maint Distribution	2,032.00	2,035.00	2,329.50	2,132.17
3 Year Avg Standby Hourly Rate (Historical - 2015,2016,2017)				\$ 27.96
FTY Standby Hourly Rate @ 3% Increase to Historical Standby Rate				\$ 28.80
FTY Standby \$ By Department				\$ 76,394
Department:				
Customer Service Field				2,246
Meter Field				2,160
Meter Reading				1,171
Production				9,412
System Maint Distribution				61,404

	Calendar Year 12/31/2015	Calendar Year 12/31/2016	Calendar Year 12/31/2017	Future Test Year 3 Yr. Avg.
Shift Expense				
Shift (\$)	\$ 24,459	\$ 19,640	\$ 254	\$ 14,784
Department:				
Maintenance	71	100	254	142
Meter Reading	414	-	-	138
Production	18,516	17,946	-	12,154
System Maint Distribution	5,458	1,593	-	2,350
FTY Shift Hourly Rate @ 3% Increase to Historical Shift Rate				\$ 15,228
FTY Shift \$ By Department				
Department:				
Maintenance				146
Meter Reading				142
Production				12,519
System Maint Distribution				2,421

SUEZ WATER PENNSYLVANIA
EMPLOYEE PAYROLL FOR FUTURE TEST YEAR ENDED DECEMBER 31, 2018

	Calendar Year 12/31/2015	Calendar Year 12/31/2016	Calendar Year 12/31/2017	Future Test Year 3 Yr. Avg.
Substitution Expense				
Substitution (\$)	\$ 5,613	\$ 3,511	\$ 4,290	\$ 4,471
Department:				
Customer Service Field	173	-	-	58
Meter Field	2,299	1,763	-	1,354
System Maint Distribution	3,141	1,748	4,290	3,060
Substitution (Hours)	116	69	84	90
Department:				
Customer Service Field	4.00	-	-	1.33
Meter Field	48.50	33.00	-	27.17
System Maint Distribution	63.50	36.00	84.00	61.17
3 Year Avg Overtime Hourly Rate (Historical - 2015,2016,2017)				\$ 49.86
FTY Substitution Hourly Rate @ 3% Increase to Historical Substitution Rate				\$ 51.36
FTY Substitution \$ By Department				\$ 4,605
Department:				
Customer Service Field				\$ 68
Meter Field				\$ 1,395
System Maint Distribution				\$ 3,142

SUEZ WATER PENNSYLVANIA
EMPLOYEE PAYROLL FOR FULLY PROJECTED FUTURE TEST YEAR ENDED DECEMBER 31, 2019

	Calendar Year 12/31/2015	Calendar Year 12/31/2016	Calendar Year 12/31/2017	Future Test Year 3 Yr. Avg.	Fully Projected Future Test Year 3 Yr. Avg.
Overtime Expense					
Overtime (\$)	\$ 417,672	\$ 398,920	\$ 352,627	\$ 389,739	
Department:					
Administration - General	13,367	9,185	5,023	9,192	
Capital Management	4,878	4,158	3,696	4,244	
Customer Service Field	4,503	13,053	1,925	6,494	
Customer Service Office	34,285	49,301	51,379	44,988	
Financial Planning	6,038	3,544	3,458	4,347	
Maintenance	21,781	24,031	22,535	22,782	
Meter Field	14,786	21,579	8,962	15,109	
Meter Reading	7,692	-	-	2,564	
Production	91,607	110,963	92,289	98,286	
System Maint Distribution	218,735	163,105	163,360	181,733	
Overtime (Hours)	9,701	9,298	7,897	8,965	8,965
Department:					
Administration - General	293.00	195.00	103.50	197.17	197.17
Capital Management	131.00	115.50	101.00	115.83	115.83
Customer Service Field	132.50	339.50	56.00	176.00	176.00
Customer Service Office	1,022.00	1,576.70	1,522.75	1,373.82	1,373.82
Financial Planning	169.25	96.75	91.50	119.17	119.17
Maintenance	468.00	499.00	448.00	471.67	471.67
Meter Field	400.00	543.50	220.00	387.83	387.83
Meter Reading	204.50	-	-	68.17	68.17
Production	1,997.00	2,332.00	1,893.50	2,074.17	2,074.17
System Maint Distribution	4,883.25	3,599.75	3,461.00	3,981.33	3,981.33
				FTY	FPPTY
3 Year Avg Overtime Hourly Rate (Historical - 2015,2016,2017)				\$ 43.47	
FPPTY Overtime Hourly Rate @ 3% Increase to FTY Overtime Rate				\$ 44.78	\$ 46.12
FPPTY Overtime \$ By Department				\$ 401,432	\$ 413,475
Department:					
Administration - General				\$ 8,829	\$ 9,093
Capital Management				\$ 5,187	\$ 5,342
Customer Service Field				\$ 7,881	\$ 8,117
Customer Service Office				\$ 61,515	\$ 63,361
Financial Planning				\$ 5,336	\$ 5,496
Maintenance				\$ 21,120	\$ 21,753
Meter Field				\$ 17,366	\$ 17,887
Meter Reading				\$ 3,052	\$ 3,144
Production				\$ 92,875	\$ 95,661
System Maint Distribution				\$ 178,272	\$ 183,620

SUEZ WATER PENNSYLVANIA
EMPLOYEE PAYROLL FOR FULLY PROJECTED FUTURE TEST YEAR ENDED DECEMBER 31, 2019

	Calendar Year 12/31/2015	Calendar Year 12/31/2016	Calendar Year 12/31/2017	Future Test Year 3 Yr. Avg.	Fully Projected Future Test Year 3 Yr. Avg.
Standby Expense					
Standby (\$)	\$ 65,700	\$ 68,874	\$ 87,933	\$ 74,169	
Department:					
Customer Service Field	677	5,093	-	1,923	
Meter Field	2,054	2,948	752	1,918	
Meter Reading	3,029	-	-	1,010	
Production	4,782	3,958	19,638	9,459	
System Maint Distribution	55,158	56,875	67,543	59,859	
Standby (Hours)	2,450	2,502	3,007	2,653	2,653
Department:					
Customer Service Field	27.50	206.50	-	78.00	78.00
Meter Field	83.50	113.50	28.00	75.00	75.00
Meter Reading	122.00	-	-	40.67	40.67
Production	184.50	147.00	649.00	326.83	326.83
System Maint Distribution	2,032.00	2,035.00	2,329.50	2,132.17	2,132.17
				FTY	FPFTY
3 Year Avg Standby Pay (Historical - 2015,2016,2017)				\$ 27.96	
FPFTY Standby Hourly Pay @ 3% Increase to FTY Standby Pay				\$ 28.80	\$ 29.66
FPFTY Standby \$ By Department				\$ 76,394	\$ 78,686
Department:					
Customer Service Field				2,246	2,314
Meter Field				2,160	2,225
Meter Reading				1,171	1,206
Production				9,412	9,695
System Maint Distribution				61,404	63,246

	Calendar Year 12/31/2015	Calendar Year 12/31/2016	Calendar Year 12/31/2017	Future Test Year 3 Yr. Avg.	Fully Projected Future Test Year 3 Yr. Avg.
Shift Expense					
Shift (\$)	\$ 24,459	\$ 19,640	\$ 254	\$ 14,784	\$ 14,784
Department:					
Maintenance	71	100	254	142	142
Meter Reading	414	-	-	138	138
Production	18,516	17,946	-	12,154	12,154
System Maint Distribution	5,458	1,593	-	2,350	2,350
				FTY	FPFTY
FPFTY Overtime Hourly Rate @ 3% Increase to FTY Shift Pay				\$ 15,228	\$ 15,685
FPFTY Standby \$ By Department					
Department:					
Maintenance				146	150
Meter Reading				142	146
Production				12,519	12,894
System Maint Distribution				2,421	2,494

**SUEZ WATER PENNSYLVANIA
EMPLOYEE PAYROLL FOR FULLY PROJECTED FUTURE TEST YEAR ENDED DECEMBER 31, 2019**

	Calendar Year 12/31/2015	Calendar Year 12/31/2016	Calendar Year 12/31/2017	Future Test Year 3 Yr. Avg.	Fully Projected Future Test Year 3 Yr. Avg.
Substitution Expense					
Substitution (\$)	\$ 5,613	\$ 3,511	\$ 4,290	\$ 4,471	
Department:					
Customer Service Field	173	-	-	58	
Meter Field	2,299	1,763	-	1,354	
System Maint Distribution	3,141	1,748	4,290	3,060	
Substitution (Hours)	116	69	84	90	90
Department:					
Customer Service Field	4.00	-	-	1.33	1.33
Meter Field	48.50	33.00	-	27.17	27.17
System Maint Distribution	63.50	36.00	84.00	61.17	61.17
				<u>FTY</u>	<u>FPFTY</u>
3 Year Avg Overtime Hourly Rate (Historical - 2015,2016,2017)				\$ 49.86	
FTY Overtime Hourly Rate @ 3% Increase to Historical Overtime Rate				\$ 51.36	\$ 52.90
FTY Overtime \$ By Department				\$ 4,605	\$ 4,743
Department:					
Customer Service Field				68	71
Meter Field				1,395	1,437
System Maint Distribution				3,142	3,236

SUEZ WATER PENNSYLVANIA
 LABOR EXPENSE FOR FUTURE TEST YEAR ENDED DECEMBER 31, 2018 - CALCULATION OF PAYROLL TAX

Line #	Employee ID #	Job Title	Office Location	Bargaining Exempt/Non-Exempt	Department	2018 FTY Salary	FTY FICA	FTY Medicare	FUI	SUI
						Total	6.200%	1.450%	0.600%	2.3905%
1	00000001005	Field Service Representative	PA Harrisburg	Bargaining	Customer Service Field/Meter	\$ 63,136	\$ 3,914	\$ 915	\$ 42	\$ 239
2	00001177634	Field Service Representative	PA Harrisburg	Bargaining	Customer Service Field/Meter	56,806	3,522	824	42	239
3	00001176403	Field Service Representative	PA Harrisburg	Bargaining	Customer Service Field/Meter	50,499	3,131	732	42	239
4	00001176599	Field Service Representative	PA Harrisburg	Bargaining	Customer Service Field/Meter	63,136	3,914	915	42	239
5	00001175239	Customer Serv Rep Office-Harr	PA Harrisburg	Bargaining	Customer Service Office	59,302	3,677	860	42	239
6	00001178480	Customer Serv Rep Office-Harr	PA Harrisburg	Bargaining	Customer Service Office	47,437	2,941	688	42	239
7	00001178579	Customer Serv Rep Office-Harr	PA Harrisburg	Bargaining	Customer Service Office	58,302	3,677	860	42	239
8	00001177762	Customer Serv Rep Office-Harr	PA Harrisburg	Bargaining	Customer Service Office	59,302	3,677	860	42	239
9	00001178715	Customer Serv Rep Office-Harr	PA Harrisburg	Bargaining	Customer Service Office	47,437	2,941	688	42	239
10	00001173185	Customer Serv Rep Office-Harr	PA Harrisburg	Bargaining	Customer Service Office	59,302	3,677	860	42	239
11	00001177669	Customer Serv Rep Office-Harr	PA Harrisburg	Bargaining	Customer Service Office	59,302	3,677	860	42	239
12	00001175987	Customer Serv Rep Office-Harr	PA Harrisburg	Bargaining	Customer Service Office	59,302	3,677	860	42	239
13	00000003025	Customer Serv Rep Office-Harr	PA Harrisburg	Bargaining	Customer Service Office	59,302	3,677	860	42	239
14	00000000917	Maintenance Technician	PA Harrisburg	Bargaining	Maintenance	75,934	4,708	1,101	42	239
15	00000000915	Maintenance Technician	PA Harrisburg	Bargaining	Maintenance	75,934	4,708	1,101	42	239
16	00000001236	Maintenance Technician	PA Harrisburg	Bargaining	Maintenance	75,934	4,708	1,101	42	239
17	00001170134	Electrician	PA Harrisburg	Bargaining	Maintenance	79,220	4,912	1,149	42	239
18	00000001028	Maintenance Technician	PA Harrisburg	Bargaining	Production	78,153	4,845	1,133	42	239
19	00001177000	Relief Operator-Harrisburg	PA Harrisburg	Bargaining	Production	73,895	4,578	1,071	42	239
20	00001172861	Relief Operator-Harrisburg	PA Harrisburg	Bargaining	Production	77,337	4,795	1,121	42	239
21	00000000939	Plant Operator-Bloomsburg	PA Harrisburg	Bargaining	Production	76,234	4,726	1,105	42	239
22	00000001027	Plant Operator-Bloomsburg	PA Bloomsburg	Bargaining	Production	71,556	4,436	1,038	42	239
23	00001172807	Plant Operator-Harrisburg	PA Harrisburg	Bargaining	Production	76,234	4,726	1,105	42	239
24	00001173622	Plant Operator-Bloomsburg	PA Bloomsburg	Bargaining	Production	73,955	4,585	1,072	42	239
25	00001173364	Plant Operator-Bloomsburg	PA Bloomsburg	Bargaining	Production	73,955	4,585	1,072	42	239
26	00000000941	Plant Operator-Harrisburg	PA Harrisburg	Bargaining	Production	76,234	4,726	1,105	42	239
27	00001174942	Plant Operator-Bloomsburg	PA Bloomsburg	Bargaining	Production	73,955	4,585	1,072	42	239
28	00000001233	Plant Operator-Harrisburg	PA Harrisburg	Bargaining	Production	76,234	4,726	1,105	42	239
29	00001172638	Plant Operator-Harrisburg	PA Harrisburg	Bargaining	Production	76,234	4,726	1,105	42	239
30	00000000625	Plant Operator-Harrisburg	PA Harrisburg	Bargaining	Production	76,234	4,726	1,105	42	239
31	00000002625	Crew Chief-Bloomsburg	PA Bloomsburg	Bargaining	System Maint Distribution	76,024	4,714	1,102	42	239
32	00000001029	Utility A Person -Bloomsburg	PA Bloomsburg	Bargaining	System Maint Distribution	72,860	4,517	1,056	42	239
33	00001172842	Utility A Person -Bloomsburg	PA Bloomsburg	Bargaining	System Maint Distribution	72,860	4,517	1,056	42	239
34	00000001035	Utility B Person -Bloomsburg	PA Bloomsburg	Bargaining	System Maint Distribution	64,058	3,972	929	42	239
35	00000000972	Equipment Operator-Harrisburg	PA Harrisburg	Bargaining	System Maint Distribution	82,823	5,135	1,201	42	239
36	00001170305	Utility Worker-Harrisburg	PA Harrisburg	Bargaining	System Maint Distribution	74,022	4,589	1,073	42	239
37	00000001073	Utility Worker-Harrisburg	PA Harrisburg	Bargaining	System Maint Distribution	74,022	4,589	1,073	42	239
38	00001172732	Utility Worker-Harrisburg	PA Harrisburg	Bargaining	System Maint Distribution	74,022	4,589	1,073	42	239
39	00001170352	Utility Worker-Harrisburg	PA Harrisburg	Bargaining	System Maint Distribution	74,022	4,589	1,073	42	239
40	00000000489	Equipment Operator-Harrisburg	PA Harrisburg	Bargaining	System Maint Distribution	82,823	5,135	1,201	42	239
41	00001172001	Utility Worker-Harrisburg	PA Harrisburg	Bargaining	System Maint Distribution	74,022	4,589	1,073	42	239
42	00001178622	Utility Worker-Harrisburg	PA Harrisburg	Bargaining	System Maint Distribution	74,022	4,589	1,073	42	239
43	00001172012	Utility Worker-Harrisburg	PA Harrisburg	Bargaining	System Maint Distribution	74,022	4,589	1,073	42	239
44	00000001015	Leader-Harrisburg	PA Harrisburg	Bargaining	System Maint Distribution	85,642	5,310	1,242	42	239
45	00000001164	Leader-Harrisburg	PA Harrisburg	Bargaining	System Maint Distribution	85,642	5,310	1,242	42	239
46	00000000980	Field Service Representative	PA Harrisburg	Bargaining	System Maint Distribution/Meter	71,097	4,408	1,031	42	239
47	00001172754	Utility Worker-Harrisburg	PA Harrisburg	Bargaining	System Maint Distribution	74,022	4,589	1,073	42	239
48	00001176303	Utility Worker-Harrisburg	PA Harrisburg	Bargaining	System Maint Distribution	74,022	4,589	1,073	42	239
49	00000000924	Utility Worker-Harrisburg	PA Harrisburg	Bargaining	System Maint Distribution	74,022	4,589	1,073	42	239
50	00000001467	Leader-Harrisburg	PA Harrisburg	Bargaining	System Maint Distribution	85,642	5,310	1,242	42	239
51		Subtotal				3,550,421	220,126	51,481	2,100	11,953
52		Vacancies:	None							
53		Subtotal								
54										
55										
56	Projected New Hires:									
57	start 1/1/2019	Utility B Person	PA Bloomsburg	Bargaining	System Maint Distribution	68,332	4,237	991	42	239
58	start 1/1/2019	Electrician/SCADA	PA Bloomsburg	Bargaining	Maintenance					
59		Subtotal				68,332	4,237	991	42	239
60										
61		Total Bargaining				3,618,753	224,363	52,472	2,142	12,192

SUEZ WATER PENNSYLVANIA
 LABOR EXPENSE FOR FUTURE TEST YEAR ENDED DECEMBER 31, 2018 - CALCULATION OF PAYROLL TAX

Line #	Employee ID #	Job Title	Office Location	Bargaining Exempt/Non-Exempt	Department	Total	FTY FICA	FTY Medicare	FUI	SUI
81	Non-Exempt/Exempt						0.200%	1.450%	0.600%	2.3805%
82	0000000686	Superintendent	PA Bloomsburg	Exempt	Administration - General	\$ 98,997	\$ 6,138	\$ 1,435	\$ 42	\$ 239
83	00001178714	Manager Water Quality	PA Harrisburg	Exempt	Administration - General	103,644	6,426	1,503	42	239
84	00001178983	NRW Specialist	PA Harrisburg	Exempt	Administration - General	58,705	3,640	851	42	239
85	00001173784	Water Quality Specialist	PA Harrisburg	Exempt	Administration - General	71,370	4,425	1,035	42	239
86	00001177800	Data & Asset Mgmt Specialist	PA Harrisburg	Exempt	Administration - General	72,196	4,476	1,047	42	239
87	00000009886	General Manager	PA Harrisburg	Exempt	Administration - General	290,208	7,979	2,900	42	239
88	00001175835	Director Operations	PA Harrisburg	Exempt	Administration - General	174,376	7,979	2,528	42	239
89	00001173315	Administrative Coordinator	PA Harrisburg	Exempt	Administration - General	74,180	4,599	1,076	42	239
90	00001173428	Senior Engineer	PA Harrisburg	Exempt	Administration - General	127,052	7,877	1,842	42	239
91	00001177871	Manager Env Health & Safety	PA Harrisburg	Exempt	Administration - General	108,060	6,700	1,567	42	239
92	00001173659	Water Quality Specialist	PA Dallas	Exempt	Administration - General	74,941	4,644	1,087	42	239
93	00001172660	Public Affairs Mgr	PA Harrisburg	Exempt	Communications	116,702	7,236	1,692	42	239
94	00001178243	Supervisor Customer Service	PA Harrisburg	Exempt	Customer Service Office	81,113	5,029	1,176	42	239
95	00001178511	Manager Customer Service	PA Harrisburg	Exempt	Customer Service Office	119,890	7,433	1,738	42	239
96	00001176098	GIS Lead	PA Harrisburg	Exempt	Engineering	63,378	3,929	919	42	239
97	00001178264	Project Manager Engineering	PA Harrisburg	Exempt	Engineering	81,113	5,029	1,176	42	239
98	00001170362	Manager Engineering	PA Harrisburg	Exempt	Engineering	127,479	7,904	1,848	42	239
99	00001178568	Engineer	PA Harrisburg	Exempt	Engineering	72,460	4,493	1,051	42	239
100	00001178748	Construction Coordinator	PA Harrisburg	Exempt	Engineering	78,958	4,893	1,145	42	239
101	00001178494	Financial Analyst	PA Harrisburg	Exempt	Financial Planning	68,135	4,224	988	42	239
102	00001178271	Data Analyst	PA Harrisburg	Exempt	Financial Planning	54,075	3,353	784	42	239
103	00001173787	Director Finance	PA Harrisburg	Exempt	Financial Planning	141,948	7,979	2,058	42	239
104	00001174828	Assistant Manager Operations	PA Harrisburg	Exempt	Production	92,202	5,717	1,337	42	239
105	00001175056	Superintendent Production	PA Harrisburg	Exempt	Production	104,303	6,467	1,512	42	239
106	00001173102	Automated System Spec	PA Harrisburg	Exempt	Production	96,917	6,039	1,405	42	239
107	00001178485	Assistant Supervisor Prod/T&D	PA Bloomsburg	Exempt	Production	74,263	4,604	1,077	42	239
108	00000000197	Superintendent Production	PA Bloomsburg	Exempt	Production	81,711	5,066	1,185	42	239
109	00001178419	Superintendent T&D	PA Harrisburg	Exempt	System Maint Distribution	98,411	6,102	1,427	42	239
110	00000000933	Non-Revenue Water Technician	PA Harrisburg	Non-exempt	Administration - General	81,141	5,031	1,177	42	239
111	00001175840	Admin Asst	PA Harrisburg	Non-exempt	Engineering	59,471	3,687	862	42	239
112	00001173427	Accounting Rep	PA Harrisburg	Non-exempt	Financial Planning	61,407	3,807	890	42	239
113	00000000987	Lead Operator	PA Mechanicsburg	Non-exempt	Production	85,159	5,282	1,235	42	239
114	00001172494	Office Asst (Part Time)	PA Harrisburg	Non-exempt	Production	46,498	2,883	674	42	239
115	00000000955	Operator	PA Mechanicsburg	Non-exempt	Production	76,479	4,742	1,109	42	239
116	00000000973	Operator	PA Mechanicsburg	Non-exempt	Production	76,479	4,742	1,109	42	239
117	00001173628	Utility Person	PA Mechanicsburg	Non-exempt	System Maint Distribution	53,772	3,334	780	42	239
118	00001178343	Utility Person	PA Mechanicsburg	Non-exempt	System Maint Distribution	70,720	4,385	1,025	42	239
119	00001175781	Utility Person	PA Mechanicsburg	Non-exempt	System Maint Distribution	70,720	4,385	1,025	42	239
120	00001175433	Utility Person	PA Mechanicsburg	Non-exempt	System Maint Distribution	70,720	4,385	1,025	42	239
121	00000000931	Utility Person	PA Mechanicsburg	Non-exempt	System Maint Distribution	70,720	4,385	1,025	42	239
122	00001172493	Office Asst	PA Harrisburg	Non-exempt	System Maint Distribution	50,987	3,161	739	42	239
123	00001174804	Foreperson	PA Harrisburg	Non-exempt	System Maint Distribution	82,290	5,102	1,193	42	239
124	00001175450	Field Services Tech	PA Dallas	Non-exempt	System Maint Distribution/Meter	61,142	3,791	887	42	239
125	00001172919	Field Services Tech	PA Dallas	Non-exempt	System Maint Distribution/Meter	68,249	4,231	990	42	239
126	00001178112	Field Services Tech	PA Dallas	Non-exempt	System Maint Distribution/Meter	60,591	3,757	879	42	239
127	00000001014	Foreperson	PA Dallas	Non-exempt	System Maint Distribution	83,586	5,182	1,212	42	239
128		Subtotal				4,036,957	236,625	57,228	1,932	10,996
129										
130	Vacancies:	None								
131		Subtotal								
132										
133	Projected New Hires:									
134	start 1/1/2019	Admin Assistant Bloom (Part Time)	PA Bloomsburg	Non-exempt	Admin Gen	-	-	-	-	-
135	start 1/1/2019	Supervisor T&D	PA Harrisburg	Exempt	Syst/Maint/Conet	-	-	-	-	-
136	start 1/1/2019	Supervisor Prod	PA Harrisburg	Exempt	Production	-	-	-	-	-
137		Subtotal								
138										
139		Total Exempt/Non-Exempt				4,036,957	236,625	57,228	1,932	10,996
140										
141	\$ 121	Bargaining/Exempt/Non-Exempt				\$ 7,655,710	\$ 460,887	\$ 109,700	\$ 4,074	\$ 23,188

LABOR EXPENSE FOR FULLY PROJECTED FUTURE TEST YEAR ENDED DECEMBER 31, 2019 - CALCULATION OF PAYROLL TAX

Line #	Employee ID #	Job Title	Office Location	Bargaining Exempt/Non-Exempt	Department	FPFTY 2019 Total	FTY FICA 6.200%	FTY Medicare 1.450%	FUI 0.600%	SUI 2.3905%
		Bargaining								
1	0000001005	Field Service Representative	PA Harrisburg	Bargaining	Customer Service Field/Meter	\$ 64,886	\$ 4,023	\$ 941	\$ 42	\$ 239
2	0000117834	Field Service Representative	PA Harrisburg	Bargaining	Customer Service Field/Meter	58,380	3,820	847	42	239
3	00001178403	Field Service Representative	PA Harrisburg	Bargaining	Customer Service Field/Meter	51,899	3,218	753	42	239
4	00001178599	Field Service Representative	PA Harrisburg	Bargaining	Customer Service Field/Meter	64,886	4,023	941	42	239
5	00001178239	Customer Serv Rep Office-Harr	PA Harrisburg	Bargaining	Customer Service Office	60,951	3,779	884	42	239
6	00001178480	Customer Serv Rep Office-Harr	PA Harrisburg	Bargaining	Customer Service Office	48,756	3,023	707	42	239
7	00001178579	Customer Serv Rep Office-Harr	PA Harrisburg	Bargaining	Customer Service Office	60,951	3,779	884	42	239
8	0000117762	Customer Serv Rep Office-Harr	PA Harrisburg	Bargaining	Customer Service Office	60,951	3,779	884	42	239
9	00001178715	Customer Serv Rep Office-Harr	PA Harrisburg	Bargaining	Customer Service Office	48,756	3,023	707	42	239
10	00001173185	Customer Serv Rep Office-Harr	PA Harrisburg	Bargaining	Customer Service Office	60,951	3,779	884	42	239
11	00001178689	Customer Serv Rep Office-Harr	PA Harrisburg	Bargaining	Customer Service Office	60,951	3,779	884	42	239
12	00001175887	Customer Serv Rep Office-Harr	PA Harrisburg	Bargaining	Customer Service Office	60,951	3,779	884	42	239
13	00000003025	Customer Serv Rep Office-Harr	PA Harrisburg	Bargaining	Customer Service Office	60,951	3,779	884	42	239
14	00000000917	Maintenance Technician	PA Harrisburg	Bargaining	Maintenance	77,013	4,775	1,117	42	239
15	00000000915	Maintenance Technician	PA Harrisburg	Bargaining	Maintenance	77,013	4,775	1,117	42	239
16	00000001239	Maintenance Technician	PA Harrisburg	Bargaining	Maintenance	77,013	4,775	1,117	42	239
17	00001170134	Electrician	PA Harrisburg	Bargaining	Maintenance	80,346	4,981	1,165	42	239
18	start 1/1/2019	Electrician/SCADA	PA Bloomsburg	Bargaining	Maintenance	72,467	4,493	1,051	42	239
19	00000001028	Maintenance Technician	PA Harrisburg	Bargaining	Production	80,318	4,980	1,165	42	239
20	00001177000	Relief Operator-Harrisburg	PA Harrisburg	Bargaining	Production	75,880	4,705	1,100	42	239
21	00001172861	Relief Operator-Harrisburg	PA Harrisburg	Bargaining	Production	79,480	4,928	1,152	42	239
22	00000000939	Plant Operator-Harrisburg	PA Harrisburg	Bargaining	Production	78,346	4,857	1,136	42	239
23	00000001027	Plant Operator-Bloomsburg	PA Bloomsburg	Bargaining	Production	79,538	4,559	1,066	42	239
24	00001172907	Plant Operator-Harrisburg	PA Harrisburg	Bargaining	Production	78,346	4,857	1,136	42	239
25	00001173822	Plant Operator-Bloomsburg	PA Bloomsburg	Bargaining	Production	76,004	4,712	1,102	42	239
26	00001173364	Plant Operator-Bloomsburg	PA Bloomsburg	Bargaining	Production	76,004	4,712	1,102	42	239
27	00000000941	Plant Operator-Harrisburg	PA Harrisburg	Bargaining	Production	78,346	4,857	1,136	42	239
28	00001174842	Plant Operator-Bloomsburg	PA Bloomsburg	Bargaining	Production	76,004	4,712	1,102	42	239
29	00000001233	Plant Operator-Harrisburg	PA Harrisburg	Bargaining	Production	78,346	4,857	1,136	42	239
30	00001172936	Plant Operator-Harrisburg	PA Harrisburg	Bargaining	Production	78,346	4,857	1,136	42	239
31	00000000925	Plant Operator-Harrisburg	PA Harrisburg	Bargaining	Production	78,346	4,857	1,136	42	239
32	00000002925	Crew Chief-Bloomsburg	PA Bloomsburg	Bargaining	System Maint Distribution	77,817	4,825	1,128	42	239
33	00000001029	Utility A Person -Bloomsburg	PA Bloomsburg	Bargaining	System Maint Distribution	74,578	4,624	1,081	42	239
34	00001172842	Utility A Person -Bloomsburg	PA Bloomsburg	Bargaining	System Maint Distribution	74,578	4,624	1,081	42	239
35	00000001035	Utility B Person -Bloomsburg	PA Bloomsburg	Bargaining	System Maint Distribution	65,569	4,065	951	42	239
36	00000000972	Equipment Operator-Harrisburg	PA Harrisburg	Bargaining	System Maint Distribution	84,776	5,256	1,229	42	239
37	00001170305	Utility Worker-Harrisburg	PA Harrisburg	Bargaining	System Maint Distribution	75,767	4,698	1,099	42	239
38	00000001073	Utility Worker-Harrisburg	PA Harrisburg	Bargaining	System Maint Distribution	75,767	4,698	1,099	42	239
39	00001172732	Utility Worker-Harrisburg	PA Harrisburg	Bargaining	System Maint Distribution	75,767	4,698	1,099	42	239
40	00001170352	Utility Worker-Harrisburg	PA Harrisburg	Bargaining	System Maint Distribution	75,767	4,698	1,099	42	239
41	00000000499	Equipment Operator-Harrisburg	PA Harrisburg	Bargaining	System Maint Distribution	84,776	5,256	1,229	42	239
42	00001172001	Utility Worker-Harrisburg	PA Harrisburg	Bargaining	System Maint Distribution	75,767	4,698	1,099	42	239
43	00001178622	Utility Worker-Harrisburg	PA Harrisburg	Bargaining	System Maint Distribution	75,767	4,698	1,099	42	239
44	00001172012	Utility Worker-Harrisburg	PA Harrisburg	Bargaining	System Maint Distribution	75,767	4,698	1,099	42	239
45	00000001015	Leader-Harrisburg	PA Harrisburg	Bargaining	System Maint Distribution	87,661	5,435	1,271	42	239
46	00000001184	Leader-Harrisburg	PA Harrisburg	Bargaining	System Maint Distribution	87,661	5,435	1,271	42	239
47	00000000980	Field Service Representative	PA Harrisburg	Bargaining	System Maint Distribution/Meter	72,795	4,513	1,056	42	239
48	00001172754	Utility Worker-Harrisburg	PA Harrisburg	Bargaining	System Maint Distribution	75,767	4,698	1,099	42	239
49	00001178303	Utility Worker-Harrisburg	PA Harrisburg	Bargaining	System Maint Distribution	75,767	4,698	1,099	42	239
50	00000000624	Utility Worker-Harrisburg	PA Harrisburg	Bargaining	System Maint Distribution	75,767	4,698	1,099	42	239
51	00000001467	Leader-Harrisburg	PA Harrisburg	Bargaining	System Maint Distribution	87,661	5,435	1,271	42	239
52	start 1/1/2019	Utility B Person	PA Bloomsburg	Bargaining	System Maint Distribution					
53		Subtotal				3,710,911	230,076	53,808	2,142	12,192
54										
55	Vacancies:	None								
56		Subtotal								
57										
58	Projected New Hires:	None								
59		Subtotal								
60										
61		Total Bargaining				3,710,911	230,076	53,808	2,142	12,192

LABOR EXPENSE FOR FULLY PROJECTED FUTURE TEST YEAR ENDED DECEMBER 31, 2019 - CALCULATION OF PAYROLL TAX

Line #	Employee ID #	Job Title	Office Location	Bargaining		Total	FTY FICA	FTY Medicare	FUI	SUI
				Exempt/Non-	Department					
61	Non-Exempt/Exempt						6.200%	1.450%	0.600%	2.3905%
62	0000000986	Superintendent	PA Bloomsburg	Exempt	Administration - General	\$ 101,967	\$ 6,322	\$ 1,479	\$ 42	\$ 239
63	00001178714	Manager Water Quality	PA Harrisburg	Exempt	Administration - General	106,753	6,619	1,548	42	239
64	00001176883	NRW Specialist	PA Harrisburg	Exempt	Administration - General	60,466	3,749	877	42	239
65	00001173794	Water Quality Specialist	PA Harrisburg	Exempt	Administration - General	73,511	4,558	1,066	42	239
66	00001177800	Data & Asset Mgmt Specialist	PA Harrisburg	Exempt	Administration - General	74,362	4,610	1,078	42	239
67	0000000966	General Manager	PA Harrisburg	Exempt	Administration - General	298,814	18,533	4,334	42	239
68	00001175835	Director Operations	PA Harrisburg	Exempt	Administration - General	179,607	11,136	2,604	42	239
69	00001173315	Administrative Coordinator	PA Harrisburg	Exempt	Administration - General	76,406	4,737	1,108	42	239
70	00001173428	Senior Engineer	PA Harrisburg	Exempt	Administration - General	130,863	8,114	1,898	42	239
71	00001176771	Manager Env Health & Safety	PA Harrisburg	Exempt	Administration - General	111,301	6,901	1,614	42	239
72	00001173659	Water Quality Specialist	PA Dallas	Exempt	Administration - General	77,190	4,786	1,119	42	239
73	00001172860	Public Affairs Mgr	PA Harrisburg	Exempt	Communications	120,203	7,453	1,743	42	239
74	00001178243	Supervisor Customer Service	PA Harrisburg	Exempt	Customer Service Office	83,546	5,180	1,211	42	239
75	00001176511	Manager Customer Service	PA Harrisburg	Exempt	Customer Service Office	123,487	7,656	1,791	42	239
76	00001176098	GIS Lead	PA Harrisburg	Exempt	Engineering	65,279	4,047	947	42	239
77	00001178264	Project Manager Engineering	PA Harrisburg	Exempt	Engineering	83,546	5,180	1,211	42	239
78	00001170382	Manager Engineering	PA Harrisburg	Exempt	Engineering	131,304	8,141	1,904	42	239
79	00001178568	Engineer	PA Harrisburg	Exempt	Engineering	74,634	4,627	1,082	42	239
80	00001178748	Construction Coordinator	PA Harrisburg	Exempt	Engineering	81,327	5,042	1,179	42	239
81	00001178494	Financial Analyst	PA Harrisburg	Exempt	Financial Planning	70,179	4,351	1,018	42	239
82	00001178271	Date Analyst	PA Harrisburg	Exempt	Financial Planning	55,697	3,453	808	42	239
83	00001173787	Director Finance	PA Harrisburg	Exempt	Financial Planning	146,207	9,065	2,120	42	239
84	00001174828	Assistant Manager Operations	PA Harrisburg	Exempt	Production	94,968	5,888	1,377	42	239
85	00001175056	Superintendent Production	PA Harrisburg	Exempt	Production	107,432	6,661	1,558	42	239
86	00001173102	Automated System Spec	PA Harrisburg	Exempt	Production	99,824	6,189	1,447	42	239
87	00001176485	Assistant Supervisor Prod/T&D	PA Bloomsburg	Exempt	Production	76,491	4,742	1,109	42	239
88	00000000197	Superintendent Production	PA Bloomsburg	Exempt	Production	84,162	5,218	1,220	42	239
89	start 1/1/2019	Supervisor Prod	PA Harrisburg	Exempt	Production	80,983	5,021	1,174	42	239
90	00001178419	Superintendent T&D	PA Harrisburg	Exempt	System Maint Distribution	101,364	6,285	1,470	42	239
91	start 1/1/2019	Supervisor T&D	PA Harrisburg	Exempt	System Maint Distribution	86,397	5,357	1,253	42	239
92	00000000933	Non-Revenue Water Technician	PA Harrisburg	Non-exempt	Administration - General	81,188	5,034	1,177	42	239
93	start 1/1/2019	Admin Assistant Bloom (Part Time)	PA Bloomsburg	Non-exempt	Administration - General	28,815	1,787	418	42	239
94	00001175840	Admin Asst	PA Harrisburg	Non-exempt	Engineering	61,255	3,798	888	42	239
95	00001173427	Accounting Rep	PA Harrisburg	Non-exempt	Financial Planning	63,250	3,921	917	42	239
96	00000000967	Lead Operator	PA Mechanicsburg	Non-exempt	Production	87,768	5,442	1,273	42	239
97	00001172494	Office Asst (Part Time)	PA Harrisburg	Non-exempt	Production	47,783	2,963	693	42	239
98	00000000955	Operator	PA Mechanicsburg	Non-exempt	Production	78,785	4,885	1,142	42	239
99	00000000973	Operator	PA Mechanicsburg	Non-exempt	Production	78,785	4,885	1,142	42	239
100	00001173628	Utility Person	PA Mechanicsburg	Non-exempt	System Maint Distribution	55,266	3,427	801	42	239
101	00001178343	Utility Person	PA Mechanicsburg	Non-exempt	System Maint Distribution	72,685	4,506	1,054	42	239
102	00001175781	Utility Person	PA Mechanicsburg	Non-exempt	System Maint Distribution	72,685	4,506	1,054	42	239
103	00001175433	Utility Person	PA Mechanicsburg	Non-exempt	System Maint Distribution	72,685	4,506	1,054	42	239
104	00000000931	Utility Person	PA Mechanicsburg	Non-exempt	System Maint Distribution	72,685	4,506	1,054	42	239
105	00001172493	Office Asst	PA Harrisburg	Non-exempt	System Maint Distribution	52,404	3,249	760	42	239
106	00001174894	Foreperson	PA Harrisburg	Non-exempt	System Maint Distribution	84,577	5,244	1,226	42	239
107	00001175450	Field Services Tech	PA Dallas	Non-exempt	System Maint Distribution/Meter	62,850	3,897	911	42	239
108	00001172919	Field Services Tech	PA Dallas	Non-exempt	System Maint Distribution/Meter	70,157	4,350	1,017	42	239
109	00001178112	Field Services Tech	PA Dallas	Non-exempt	System Maint Distribution/Meter	62,284	3,862	903	42	239
110	00000001014	Foreperson	PA Dallas	Non-exempt	System Maint Distribution	85,909	5,326	1,246	42	239
111		Subtotal				4,350,188	269,712	63,078	2,058	11,713
112										
113	Vacancies:	None								
114		Subtotal								
115										
116	Projected New Hires:	None								
117		Subtotal								
118										
119		Total Exempt/Non-Exempt				4,350,188	269,712	63,078	2,058	11,713
120										
121		Total Bargaining/Exempt/Non-Exempt				8,061,099	499,788	116,886	4,200	23,905

SUEZ WATER PENNSYLVANIA INC.
REBUTTAL

STATEMENT OF THE CALCULATION OF THE RATE OF RETURN UNDER PRESENT RATES FOR THE TWELVE MONTHS ENDED DECEMBER 31, 2017, 2018 AND 2019
AND THE ANTICIPATED RATE OF RETURN UNDER PROPOSED RATES FOR THE YEAR ENDING DECEMBER 31, 2019

Line No.	Description (1)	12 Months Ended 31-Dec-17 (2)	Pro Forma FTY Adjustments		Pro Forma Present Rates, 31-Dec-18 (5)	Pro Forma FPPTY Adjustments and DSIC Adjustment		Pro Forma Present Rates, 31-Dec-19 (8)	Under Proposed Rates, Supplement No. to Tariff Water Pa-PUC No. 7		
			Ref. (3)	Amount (4)		Ref. (6)	Amount (7)		Ref.	Increase (9)	Pro Forma 31-Dec-19 (10)
1	Operating Revenues	\$ 43,660,297	CEH-1	\$ (7,302)	\$ 43,652,995	CEH-1	\$ 3,070,000	\$ 46,722,995	CEH-1	\$ 5,352,005	\$ 52,075,000
2			Sch 5			Sch 4,5,7			Sch 2,7		
3	Operating Revenue Deductions:										
4	Operation and Maintenance										
5	Expenses	\$ 16,232,944	CEH-2	\$ 1,121,497	\$ 17,354,440	CEH-2	\$ 1,008,878	\$ 18,363,318	CEH-2	\$ 46,003	\$ 18,409,322
6	Taxes Other than Income	\$ 831,179	CEH-2	\$ 77,795	\$ 908,973	CEH-2	\$ 53,984	\$ 962,957		\$ -	\$ 962,957
7											
8											
9	Depreciation	7,361,991	CEH-2	691,340	8,053,332	CEH-2	562,130	8,615,462	CEH-2	\$ -	8,615,462
10	Amortization of Acquisition Adjustment	57,744	CEH-2	-	57,744	CEH-2	-	57,744	CEH-2	\$ -	57,744
11	Amortization of Regulatory Asset	(264,891)	CEH-2	-	(264,891)	CEH-2	-	(264,891)	CEH-2	\$ -	(264,891)
12											
13											
14	Total Operating										
15	Revenue Deductions	\$ 24,218,967	CEH-2	\$ 1,890,631	\$ 26,109,598	CEH-2	\$ 1,624,992	\$ 27,734,590		\$ 46,003	\$ 27,780,593
16											
17	Total Income Before Taxes and Return	\$ 19,441,330		\$ (1,897,933)	\$ 17,543,397		\$ 1,445,009	\$ 18,988,405		\$ 5,306,001	\$ 24,294,407
18											
19	Less Federal and State Taxes	\$ 6,832,581	CEH-2	\$ (3,056,910)	\$ 3,775,671		\$ 86,952	\$ 3,862,623	CEH-2	\$ 1,533,015	\$ 5,395,638
20											
21											
22	Net Operating Income										
23	Available for Return	\$ 12,608,749		\$ 1,158,977	\$ 13,767,726		\$ 1,358,057	\$ 15,125,782		\$ 3,772,986	\$ 18,898,768
24											
25											
26	Rate Base	\$ 190,763,193	CEH-1.1	\$ 12,260,610	\$ 203,023,803		\$ 34,733,836	\$ 237,757,639		\$ -	\$ 237,757,639
27											
28	Rate of Return	6.61%			6.78%			6.36%			7.95%

SUEZ WATER PENNSYLVANIA INC.

ORIGINAL COST MEASURE OF VALUE AS OF DECEMBER 31, 2017,
DECEMBER 31, 2018 AND DECEMBER 31, 2019

		<u>As of</u> <u>12/31/2017</u>	<u>As of</u> <u>12/31/2018</u>	<u>As of</u> <u>12/31/2019</u>
Original Cost of Utility Plant In Service	(a)	\$ 340,882,879	\$ 361,574,023	\$ 403,249,792
Less: Accumulated Depreciation	(a)	<u>(70,281,368)</u>	<u>(78,561,485)</u>	<u>(85,189,362)</u>
Net Utility Plant		270,601,511	283,012,538	318,060,430
CIAC and Contributions		(63,114,693)	(63,114,693) (b)	(63,114,693) (b)
Add:				
Deferred Taxes		\$ (7,848,348)	\$ (8,086,056)	\$ (8,710,883)
TCJA Regulatory Liability		\$ (10,065,851)	\$ (10,065,851)	\$ (9,800,960)
Materials and Supplies		481,594	481,594	481,594
Cash Working Capital		<u>708,981</u>	<u>796,271</u>	<u>842,151</u>
Total Original Cost Measure of Value		<u>\$ 190,763,193</u>	<u>\$ 203,023,803</u>	<u>\$ 237,757,639</u>

(a) Source: Revised Exhibits JJS-1, JJS-2 and JJS-3.

(b) 2018 and 2019 CIAC and Advances included in total Net Utility Plant.

SUEZ WATER PENNSYLVANIA INC.

<u>TYPE OF CAPITAL</u>	<u>RATIOS</u>	<u>COST RATE</u>	<u>WEIGHTED COST RATE</u>
LONG-TERM DEBT	45.82%	4.65%	2.13%
COMMON EQUITY	54.18%	10.75%	5.82%
TOTAL	100.00%		7.95%

Source: Direct testimony of Dylan D'Ascendis.

**SUEZ Water Pennsylvania Inc.
Proposed Rate Option**

	Test Year Rates	Proposed	Increase
Residential Monthly Customer Charge			
5/8	13.75	15.00	9.1%
3/4	13.75	15.00	9.1%
1	28.50	31.09	9.1%
1 1/2	57.00	62.18	9.1%
2	97.63	106.51	9.1%
3	183.13	199.78	9.1%
All Usage	7.75060	9.4160	21.5%
Commercial Monthly Customer Charge			
5/8	13.75	15.00	9.1%
3/4	13.75	15.00	9.1%
1	28.50	31.09	9.1%
1 1/2	57.00	62.18	9.1%
2	97.63	106.51	9.1%
3	183.13	199.78	9.1%
4	305.25	333.00	9.1%
6	610.50	666.00	9.1%
8	976.88	1,065.69	9.1%
First Block	7.75060	9.4160	21.5%
Second Block	5.43210	7.1790	32.2%
Industrial Monthly Customer Charge			
5/8	13.75	15.00	9.1%
3/4	13.75	15.00	9.1%
1	28.50	31.09	9.1%
1 1/2	57.00	62.18	9.1%
2	97.63	106.51	9.1%
3	183.13	199.78	9.1%
4	305.25	333.00	9.1%
6	610.50	666.00	9.1%
8	976.88	1,065.69	9.1%
First Block	7.75060	9.4160	21.5%
Second Block	5.76180	7.8710	36.6%

**SUEZ Water Pennsylvania Inc.
Proposed Rate Option**

	Test Year Rates	Proposed	Increase
Large Industrial Monthly Customer Charge			
4	305.25	333.00	9.1%
6	610.50	666.00	9.1%
All Consumption	3.60450	4.3560	20.8%
Public Authority Monthly Customer Charge			
5/8	13.75	15.00	9.1%
1	28.50	31.09	9.1%
1 1/2	57.00	62.18	9.1%
2	97.63	106.51	9.1%
3	183.13	199.78	9.1%
4	305.25	333.00	9.1%
6	610.50	666.00	9.1%
First Block	7.75060	9.4160	21.5%
Second Block	5.43210	7.1790	32.2%

SUEZ WATER PENNSYLVANIA INC.

SUMMARY OF PRO FORMA REVENUES UNDER PROPOSED RATES FOR THE TWELVE MONTHS ENDED DECEMBER 31, 2017 AND 2019
AND THE CALCULATION OF THE REVENUE INCREASE UNDER PROPOSED RATES

Customer Classification (1)	Pro Forma Revenues, Present Rates (Schedule 4) (2)	Bill Analysis Revenues, Proposed Rates (Schedule 3) (3)	Adjustment Factor (Sch. 4, col 4) (4)	Revenues, Proposed Rates (5)=(4)X(3) (5)	Pro Forma Adjustments Proposed Rates (Schedules 3 and 7) (6)	Total Pro Forma Revenue Proposed Rates (7)=(5)+(6) (7)	Proposed Increase (8)=(7)-(2) (8)	Percent Increase (9)
METERED SALES								
Residential	\$ 28,877,255	\$ 31,470,279	0.99899003	\$ 31,438,495	\$ 48,138	\$ 31,486,633	\$ 2,609,378	9.0%
Commercial	11,767,147	13,654,039	0.99980693	13,651,403	(123,553)	13,527,850	1,760,702	15.0%
Industrial	1,467,311	1,724,340	0.99990886	1,724,182	-	1,724,182	256,871	17.5%
Municipal	1,835,763	2,286,614	0.99167720	2,267,583	(83,001)	2,184,582	348,819	19.0%
Total Metered Sales	43,947,476	49,135,272		49,081,664	(158,417)	48,923,247	4,975,771	11.3%
Private Fire	1,446,048	1,663,824	1.00000000	1,663,824	10,666	1,674,491	228,443	15.8%
Public Fire	923,861	1,008,895	1.00000000	1,008,895		1,008,895	85,034	9.2%
Other Operating Revenues	405,611	405,611		405,611		405,611	-	0.0%
Total	\$ 46,722,995	\$ 52,213,602		\$ 52,159,994	\$ (147,750)	\$ 52,012,243	\$ 5,289,248	11.3%

SUEZ WATER PENNSYLVANIA INC.

SUMMARY OF APPLICATION OF PROPOSED RATES TO CUSTOMER BILL ANALYSIS AND PRO FORMA ADJUSTMENTS
FOR THE TWELVE MONTHS ENDING DECEMBER 31, 2017 AND 2019

<u>Rate Zone</u> (1)	<u>Residential</u> (2)	<u>Commercial</u> (3)	<u>Industrial</u> (4)	<u>Large Industrial</u> (5)	<u>Municipal</u> (6)	<u>Metered Total</u> (7)
<u>Proposed Rate Application, Schedule 6</u>						
Total Revenue	\$ 31,470,279	\$ 13,654,039	\$ 879,316	\$ 845,024	\$ 2,286,614	\$ 49,135,272
Total	<u>\$ 31,470,279</u>	<u>\$ 13,654,039</u>	<u>\$ 879,316</u>	<u>\$ 845,024</u>	<u>\$ 2,286,614</u>	<u>\$ 49,135,272</u>
<u>Pro Forma Adjustments, Schedule 9 - 2018 and 2019</u>						
All Including Trunk Line Mahoning Twp.	\$ 48,138	\$ (123,553)	\$ -	\$ -	\$ (83,001)	\$ (158,417)
Total	<u>\$ 48,138</u>	<u>\$ (123,553)</u>	<u>\$ -</u>	<u>\$ -</u>	<u>\$ (83,001)</u>	<u>\$ (158,417)</u>

SUEZ WATER PENNSYLVANIA INC.

SUMMARY OF REVENUE UNDER PRESENT RATES AND PRO FORMA REVENUES UNDER PRESENT RATES
FOR THE TWELVE MONTHS ENDED DECEMBER 31, 2017 AND 2019

Customer Classification (1)	Adjusted Revenues, Per Books Present Rates 12/31/2017 (a) (2)	Bill Analysis Revenues, Present Rates (Schedule 5) (3)	Ref.	Adjustment Factor (4)=(2)/(3)	Revenues Under Present Rates (5)=(4)X(3)	Pro Forma Adjustments Present Rates (Schedule 5 and 7) (6)	Add Back Annualized DSIC Revenue (7)	Total Pro Forma Revenue Present Rates (8)=(5)+(6)+(7)
METERED SALES								
Residential	\$ 26,796,924	\$ 26,824,015	Sch. 6	0.99899003	\$ 26,796,924	\$ 65,639	\$ 2,014,692	\$ 28,877,255
Commercial	11,045,912	11,048,045	Sch. 6	0.99980693	11,045,912	(99,728)	820,964	11,767,147
Industrial	1,278,641	1,278,758	Sch. 6	0.99990886	1,278,641	86,299	102,371	1,467,311
Public Sales	1,772,512	1,787,388	Sch. 6	0.99167720	1,772,512	(64,825)	128,076	1,835,763
Total Sales of Water	\$ 40,893,989	\$ 40,938,206			\$ 40,893,989	\$ (12,616)	\$ 3,066,103	\$ 43,947,476
Private Fire	\$ 1,436,836	\$ 1,436,836	Sch. 7	1.00000000	1,436,836	\$ 9,211		1,446,048
Public Fire	923,861	923,861	Sch 8	1.00000000	923,861			923,861
Other Operating Revenues	405,611	405,611			405,611			405,611
Total	\$ 43,660,297	\$ 43,704,514			\$ 43,660,297	\$ (3,404)	\$ 3,066,103	\$ 46,722,995

(a) Excludes DSIC and Unbilled Revenue.

(c) See Schedule 6.

(d) See Schedule 7.

SUEZ WATER PENNSYLVANIA INC.

SUMMARY OF APPLICATION OF PRESENT RATES TO CUSTOMER BILL ANALYSIS AND PRO FORMA ADJUSTMENTS
FOR THE TWELVE MONTHS ENDING DECEMBER 31, 2017, 2018 AND 2019

<u>Rate Zone</u> (1)	<u>Residential</u> (2)	<u>Commercial</u> (3)	<u>Industrial</u> (4)	<u>Large Industrial</u> (5)	<u>Public Authority</u> (6)	<u>Metered Total</u> (7)
<u>Present Rate Application, Schedule 6</u>						
Total Revenue	\$ 26,824,015	\$ 11,048,045	\$ 664,035	\$ 614,723	\$ 1,787,388	\$ 40,938,206
Total	<u>\$ 26,824,015</u>	<u>\$ 11,048,045</u>	<u>\$ 664,035</u>	<u>\$ 614,723</u>	<u>\$ 1,787,388</u>	<u>\$ 40,938,206</u>
<u>Pro Forma Adjustments - Schedule 9 - 2018</u>						
Total Adjustments	\$ 13,018	\$ (49,897)		\$ 86,299	\$ (56,722)	\$ (7,302)
Subtotal	<u>\$ 13,018</u>	<u>\$ (49,897)</u>	<u>\$ -</u>	<u>\$ 86,299</u>	<u>\$ (56,722)</u>	<u>\$ (7,302)</u>
<u>Pro Forma Adjustments - Schedule 9 - 2019</u>						
All	\$ (67,241)	\$ (49,832)			\$ (8,103)	\$ (125,176)
Trunk Line	\$ 119,862		\$ -			\$ 119,862
Mahoning Twp.	\$ -	\$ -				\$ -
Subtotal	<u>\$ 52,621</u>	<u>\$ (49,832)</u>	<u>\$ -</u>	<u>\$ -</u>	<u>\$ (8,103)</u>	<u>\$ (5,314)</u>
Total Adjustments	\$ 65,639	\$ (99,728)	\$ -	\$ 86,299	\$ (64,825)	\$ (12,616)

SUEZ WATER PENNSYLVANIA INC.

APPLICATION OF PRESENT RATES AND PROPOSED RATES TO CONSUMPTION ANALYSIS
YEAR ENDED DECEMBER 31, 2017

Line No	Rate Block 1000 Gallons (1)	Number Of Bills (2)	Present Consumption (3)	Test Year Rate (4)	Revenue (5)	Proposed Consumption	Proposed Rate (6)	Proposed Revenue (7)	
Residential - Monthly									
1	Customer Charge								
2	5/8	644,460	-	\$ 13.75	\$ 8,861,329		\$ 15.00	\$ 9,666,905	
3	3/4	3,179	-	13.75	43,715		15.00	47,689	
4	1	3,234	-	28.50	92,162		31.09	100,537	
5	1 1/2	204	-	57.00	11,651		62.18	12,710	
6	2	60	-	97.63	5,868		106.51	6,401	
7	3	-	-	183.13	-		199.78	-	
8	Subtotal	651,138	-		9,014,725			9,834,241	
9									
10	First Block	-	2,297,795	7.7506	17,809,290	2,297,795	9.4160	21,636,038	
12	Subtotal	-	2,297,795		17,809,290	2,297,795		21,636,038	
13									
14	Total Residential	651,138	2,297,795		\$ 26,824,015	2,297,795		\$ 31,470,279	
15									
16									
17	Commercial - Monthly								
18	Customer Charge				0		0		
19	5/8	30,038	-	\$ 13.75	\$ 413,022		\$ 15.00	\$ 450,570	
20	3/4	326	-	13.75	4,477		15.00	4,884	
21	1	13,157	-	28.50	374,983		31.09	409,061	
22	1 1/2	6,172	-	57.00	351,828		62.18	383,801	
23	2	5,631	-	97.63	549,707		106.51	599,706	
24	3	336	-	183.13	61,532		199.78	67,126	
25	4	377	-	305.25	114,937		333.00	125,386	
26	6	289	-	610.50	176,679		666.00	192,740	
27	8	27	-	976.88	26,571		1,065.69	28,987	
28	Subtotal	56,353	-		2,073,736			2,262,260	
29									
30	First Block (First 25,000)	-	566,511	7.7506	4,390,804	566,511	9.4160	5,334,272	
31	Second Block (Over 25,000)	-	843,782	5.4321	4,583,505	843,782	7.1790	6,057,507	
32	Subtotal	-	1,410,293		8,974,309	1,410,293		11,391,780	
33									
34	Total Class	56,353	1,410,293		\$ 11,048,045	1,410,293		\$ 13,654,039	

SUEZ WATER PENNSYLVANIA INC.

APPLICATION OF PRESENT AND PROPOSED RATES TO PRIVATE FIRE CONNECTIONS AS OF 12-31-2017

Rate Zone, Connection Size (1)	Number (2)	Present Rates		Number (5)	Proposed Rates	
		Rate (3)	Revenue (4)		Rate (6)	Revenue (7)
2" or smaller	883	\$ 19.30	\$ 17,041	883	\$ 22.35	\$ 19,734
3"	60	52.05	3,123	60	60.27	3,616
4"	2,218	66.76	148,078	2,218	77.31	171,479
6"	3,725	110.98	413,441	3,725	128.51	478,747
8"	2,634	165.42	435,766	2,634	191.56	504,627
10"	360	236.86	85,364	360	274.28	98,851
12"	123	328.64	40,423	123	380.57	46,810
Hydrants	6,828	43.00	293,600	6,828	49.79	339,961
Total Private Fire	<u>16,832</u>		<u>\$ 1,436,836</u>	<u>16,832</u>		<u>\$ 1,663,824</u>
HTY, FTY and FPFTY 6"	83	110.98	9,211	83	128.51	10,666

SUEZ WATER PENNSYLVANIA INC.

APPLICATION OF PRESENT AND PROPOSED RATES TO
THE NUMBER OF PUBLIC FIRE HYDRANTS AS OF DECEMBER 31, 2017

<u>Service Area</u> (1)	<u>Pro Forma Number of Bills</u> (2)	<u>Present Monthly Rate</u> (3)	<u>Pro Forma Present Revenue</u> (4)	<u>Proposed Monthly Rate</u> (5)	<u>Pro Forma Proposed Revenue</u> (6)
Bloomsburg/Dallas	4,368	\$ 18.33	\$ 80,065	\$ 20.00	\$ 87,360
Harrisburg	27,024	24.17	653,170	25.83	698,030
Mechanicsburg	7,380	25.83	190,625	25.83	190,625
Mahoning	1,644			20.00	32,880
Total	<u>40,416</u>		<u>\$ 923,861</u>		<u>\$ 1,008,895</u>

SUEZ WATER PENNSYLVANIA INC.

APPLICATION OF PRESENT RATES AND PROPOSED RATES TO PROFORMA ADJUSTMENTS
YEAR ENDED DECEMBER 31, 2017, 2018 AND 2019

Rate Block 1000 Gallons (1)	Number Of Bills (2)	Total Consumption (3)	Test Year/Present Rate (4)	Revenue (5)	Proposed Rate (6)	Proposed Revenue (7)
<u>Residential - Monthly</u>						
Customer Charge						
5/8	18,542	-	\$ 13.75	\$ 254,953	\$ 15.00	\$ 278,130
Subtotal	18,542	-		254,953		278,130
All Usage - Test Year	-	(24,426)	7.7506	(189,313)	9.4160	(229,992)
Subtotal	-	(24,426)		(189,313)		(229,992)
Total Residential	18,542	(24,426)	-	65,639	-	48,138
<u>Commercial - Monthly</u>						
Customer Charge						
5/8	-	-	13.75	-	15.00	-
3/4	-	-	13.75	-	15.00	-
1	678	-	28.50	19,323	31.09	21,079
Subtotal	678	-		19,323		21,079
Test Year First Block (First 25)	-	(15,360)	7.7506	(119,051)	9.4160	(144,632)
Test Year Second Block (Over 25)	-	(15,360)	5.4321	-	7.1790	-
Subtotal	-	(15,360)		(119,051)		(144,632)
Total Class	678	(15,360)		(99,728)		(123,553)
<u>Large Industrial - Monthly</u>						
Customer Charge						
4	-	-	305.25	-	333.00	-
6	-	-	610.50	-	666.00	-
Subtotal	-	-		-		-
Take or Pay Volume	-	23,942	3.6045	86,299	-	-
Subtotal	-	23,942		86,299		-
Total	-	23,942		86,299		-
<u>Public Authority - Monthly</u>						
Customer Charge						
5/8	(112)	-	13.75	(1,540)	15.00	(1,680)
Subtotal	(112)	-		(1,540)		(1,680)
First Block (First 160)	-	(2,800)	7.7506	(21,702)	9.4160	(26,365)
Second Block (Over 160)	-	(7,655)	5.4321	(41,584)	7.1790	(54,957)
Subtotal	-	(10,455)		(63,286)		(81,321)
Total	(112)	(10,455)		(64,826)		(83,001)
Total	19,108	(50,241)		(98,915)		(158,417)

ADJUSTMENT 1 - CUSTOMER GROWTH REVENUE ADJUSTMENT UNDER PRESENT RATES
FOR THE TEST YEARS ENDING DECEMBER 31, 2017, 2018 AND 2019

	Residential	Commercial	Industrial	Public Authority	Private Fire	Total
<u>Historic TY Customer Growth Calculation</u>						
1 Actual Normalized Bills	652,728	56,712	612	2,952	1,018	714,022
2 Actual Annualized Bills	656,790	56,712	612	2,784	1,018	717,864
3 Projected Daily Usage in gallons (a)	111.32	798.98	14,515.03	3,111.67		16,537
4 Monthly Volumes per Normalization (1000 Gallons) Line 3 X30 /1000	3.34	23.97	435.45	93.35		
5 HTY Customer Annualized Growth Bills (Line 2-Line 1) Divided by 2	2,016	NA	NA	(84)	(1)	1,931
6 HTY Customer Annualized Growth Volumes (Line 4 X Line 5 / 2)	6,733	NA	NA	(7,841)	-	(1,108)
Priced At First Block	6,733			(2,100)		4,633
Priced At Second Block				(5,741)		(5,741)
<u>Historic TY Customer Growth Revenue Calculation</u>						
7 Average Service Charge	\$ 13.75	\$ 28.50		\$ 13.75	\$ 110.98	
8 Revenue From Service Charge (Line 7 X Line 5)	\$ 27,720			\$ (1,155)	\$ (111)	
9 Volume Charge - First Block	7.7506	7.7506		7.7506		
Volume Charge - Second Block		5.4321		5.4321		
10 Revenue from Volumetric Charge (Line 9 X Line 6)						
Priced At First Block	\$ 52,188			\$ (16,278)		
Priced At Second Block				(31,188)		
11 Total Historical TY Adjustment (Line 8 + Line 10)	\$ 79,908			\$ (48,619)	\$ (111)	\$ 31,178
<u>Future Test Year Customer Growth Calculation</u>						
12 Forecasted Customer Growth	562.6	28.3		(1.2)	3.5	
13 Annualized Bills (Line 12 X 12)	6,751	339		(14)	42	
14 Average Volumes Per Normalization						
Priced At First Block	3.34	23.97		25.00		
Priced At Second Block				88.35		
15 Normalized Volumes (Line 13 X Line 14)	22,548	8,125				
16 Revenue From Service Charge (Line 7 X Line 13)	\$ 92,826	\$ 9,682	\$ -	\$ (193)	\$ 4,661	\$ 106,956
17 Revenue from Volumetric Charge (Line 9 X Line 15)						
Priced At First Block	\$ 174,763	\$ 62,977		\$ (2,713)		\$ 235,028
Priced At Second Block	\$ -	\$ -		\$ (5,198)		\$ (5,198)
18 Total FTY Adjustment (Line 16 + Line 17)	\$ 267,589	\$ 72,639	\$ -	\$ (6,103)	\$ 4,661	\$ 336,786
<u>Fully Projected Future Test Year Customer Growth Calculation</u>						
19 Forecasted Customer Growth	562.6	28.3	-	(1.2)	3.5	
20 Annualized Bills (Line 12 X 12)	6,751	339		(14)	42	
21 Average Volumes Per Normalization						
Priced At First Block	3.34	23.97	-	25.00	-	
Priced At Second Block	-	-	-	88.35	-	
Total	3.34	23.97	-	93.35	-	
22 Normalized Volumes (Line 13 X Line 14)	22,548	8,125		(350)		
23 Revenue From Service Charge (Line 7 X Line 13)	\$ 92,826	\$ 9,682	\$ -	\$ (193)	\$ 4,661	\$ 106,956
24 Revenue from Volumetric Charge (Line 9 X Line 15)						
Priced At First Block	\$ 174,763	\$ 62,977		\$ (2,713)		\$ 235,028
Priced At Second Block	\$ -	\$ -		\$ (5,198)		\$ (5,197)
25 Total FTY Adjustment (Line 16 + Line 17)	\$ 267,589	\$ 72,639	\$ -	\$ (6,103)	\$ 4,661	\$ 336,786
Total Adjustment	\$ 615,087	\$ 145,278	\$ -	\$ (64,825)	\$ 9,211	\$ 704,751

(a) For residential and commercial, see declining usage workpaper. For Industrial and Public, based on 2017 usage.

	Residential	Commercial	Industrial	Public Authority	Private Fire Protection
26 Number of Customers					
26 Period Ending 12/31/15	53,269.3	4,669.0	51.1	248.5	1,011.1
27 Period Ending 12/31/16	53,604.7	4,668.8	51.0	248.2	1,021.9
28 Historic Test Year Period Ending 12/31/17	54,394.4	4,725.6	51.0	248.2	1,018.2
29 Increase 2015-2016	535.4	17.8	(0.1)	(0.3)	10.8
30 Increase 2016-2017	589.8	38.8	-	(2.0)	(3.8)
31 Average Growth/(Decline)	562.6	28.3	(0.0)	(1.2)	3.5

SUEZ WATER PENNSYLVANIA INC.
HARRISBURG, PENNSYLVANIA

**ATTACHMENTS TO HEPPENSTALL
REBUTTAL TESTIMONY**



Excellence Delivered As Promised

Pennsylvania Public Utility Commission

v.

SUEZ Water Pennsylvania, Inc.

Docket No. R-2018-3000834

**Interrogatories of the
Office of Consumer Advocate
Set IV**

OCA-IV-37
(Heppenstall)

- OCA-IV-37** With reference to Exhibit CEH-2, Schedule-7, Adjustment No. 6,
- a. Please provide a breakdown of the purchased water expense and quantity by supplier in each of the 3 years provided.
 - b. Please provide data that demonstrate that the cost of purchased water varies with inflation.
 - c. Please explain how the cost of water could decrease in 2017 while consumption increased.
 - d. Please provide the contract for the purchase of water from Susquehanna Area Regional Airport Authority (SARAA).
 - e. Please explain the reason for the water purchase from SARAA.

Response:

- a. Please see attached OCA-IV-37a Attachment
- b. Per the attached report titled "Water and Wastewater Annual Price Escalation Rates for Selected Cities across the United States" dated September 2017, performed by the US Department of Energy, the average increase for the price of water from 2008 through 2016 was 4.1%, much higher than the inflation factors used for purchased water in the Company's filing. Therefore, adjusting this expense using inflation factors of 2.125% and 2.300% is conservative.
- c. The Cost of water decreased due to the fact that the price of the purchased water from Steelton is higher per 1,000 gallons and the Company purchased more water from Steelton in 2016 than in 2017.
- d. Please see attached OCA-IV-37d Attachment
- e. The company added this expense in 2019 due to SARAA treating the issue of PFOS. The company intendeds to purchase water from SARAA once this issue is resolved.

SUEZ Water Pennsylvania
Docket No. R-2018-300834

OCA-IV-37part a Attachment
Page 1 of 1

2017

Line No.	Name of Vender (a)	Point of Delivery (b)	Service* Capacity (c)	Pressure @ Point of Delivery (d)	Quantity of Water Purch. (1,000-Gal.) (e)	Cost of Purchased Water (f)	Cost Per (1,000-Gal.) \$ (g)
1	Borough of Steelton	Kelker Street, Steelton, PA			Standby Fee	\$ 20,100	
2	Borough of Steelton	Kelker Street, Steelton, PA	6"	60 psi	577	\$ -	
3	AQUA PA	Hill Drive, Dallas, PA	2"	90 psi	13035	\$ 48,521	0.27
				TOTALS	13,612	\$ 68,621	0.20

2016

Line No.	Name of Vender (a)	Point of Delivery (b)	Service* Capacity (c)	Pressure @ Point of Delivery (d)	Quantity of Water Purch. (1,000-Gal.) (e)	Cost of Purchased Water (f)	Cost Per (1,000-Gal.) \$ (g)
1	Borough of Steelton	Kelker Street, Steelton, PA			Standby Fee	\$ 20,100	
2	Borough of Steelton	Kelker Street, Steelton, PA	6"	60 psi	2,387	\$ 1,914	1.25
3	AQUA PA	Hill Drive, Dallas, PA	2"	90 psi	10,424	\$ 48,892	0.21
4	City of Harrisburg	TGIF on Paxton Street, Harrisburg, PA	24"	100 psi	0	\$ -	
				TOTALS	12,811	\$ 70,906	0.18

2015

Line No.	Name of Vender (a)	Point of Delivery (b)	Service* Capacity (c)	Pressure @ Point of Delivery (d)	Quantity of Water Purch. (1,000-Gal.) (e)	Cost of Purchased Water (f)	Cost Per (1,000-Gal.) \$ (g)
1	Borough of Steelton	Kelker Street, Steelton, PA			Standby Fee	\$ 20,100	
2	Borough of Steelton	Kelker Street, Steelton, PA	6"	60 psi	4,100	\$ 12,824	0.32
3	AQUA PA	Hill Drive, Dallas, PA	2"	90 psi	11,843	\$ 51,322	0.23
4	City of Harrisburg	TGIF on Paxton Street, Harrisburg, PA	24"	100 psi	265		
				TOTALS	16,208	\$ 84,246	0.19

U.S. DEPARTMENT OF

ENERGY

Office of
**ENERGY EFFICIENCY &
RENEWABLE ENERGY**

Water and Wastewater Annual Price Escalation Rates for Selected Cities across the United States

September 2017

FEMP
Federal Energy Management Program

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Abbreviations and Acronyms

AWWA	American Water Works Association
BLS	Bureau of Labor Statistics
CPI	Consumer Price Index
DOE	U.S. Department of Energy
EIA	Energy Information Administration
FEMP	Federal Energy Management Program
kGal	1000 gallons
LCCA	life-cycle cost analysis
PNNL	Pacific Northwest National Laboratory

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Preface

Annual water and wastewater price escalation rates are needed for U.S. Department of Energy's Federal Energy Management Program (FEMP) to make informed decisions using life-cycle cost analyses (LCCA) on water efficiency projects. However, determining appropriate water and wastewater price escalation rates can be difficult, and regional data on the topic is often unavailable. For these reasons, Pacific Northwest National Laboratory (PNNL) conducted this study for FEMP to identify trends in annual water and wastewater price escalation rates across the U.S.

To develop a sample set of water and wastewater annual price escalation rates throughout the U.S., PNNL used the American Water Works Association water and wastewater rate surveys to gather historical rate data for water and wastewater utilities in the United States. This data was compiled and assessed to produce a single dataset of time series rate data for more than 60 water utilities and 40 wastewater utilities located throughout the U.S. (see Figure E.1). An annual price escalation rate was calculated for each utility based on the reported rates for the past 8 years, and statistical trends in the annual price escalation rates are provided by the seven regions identified in Figure E.1.

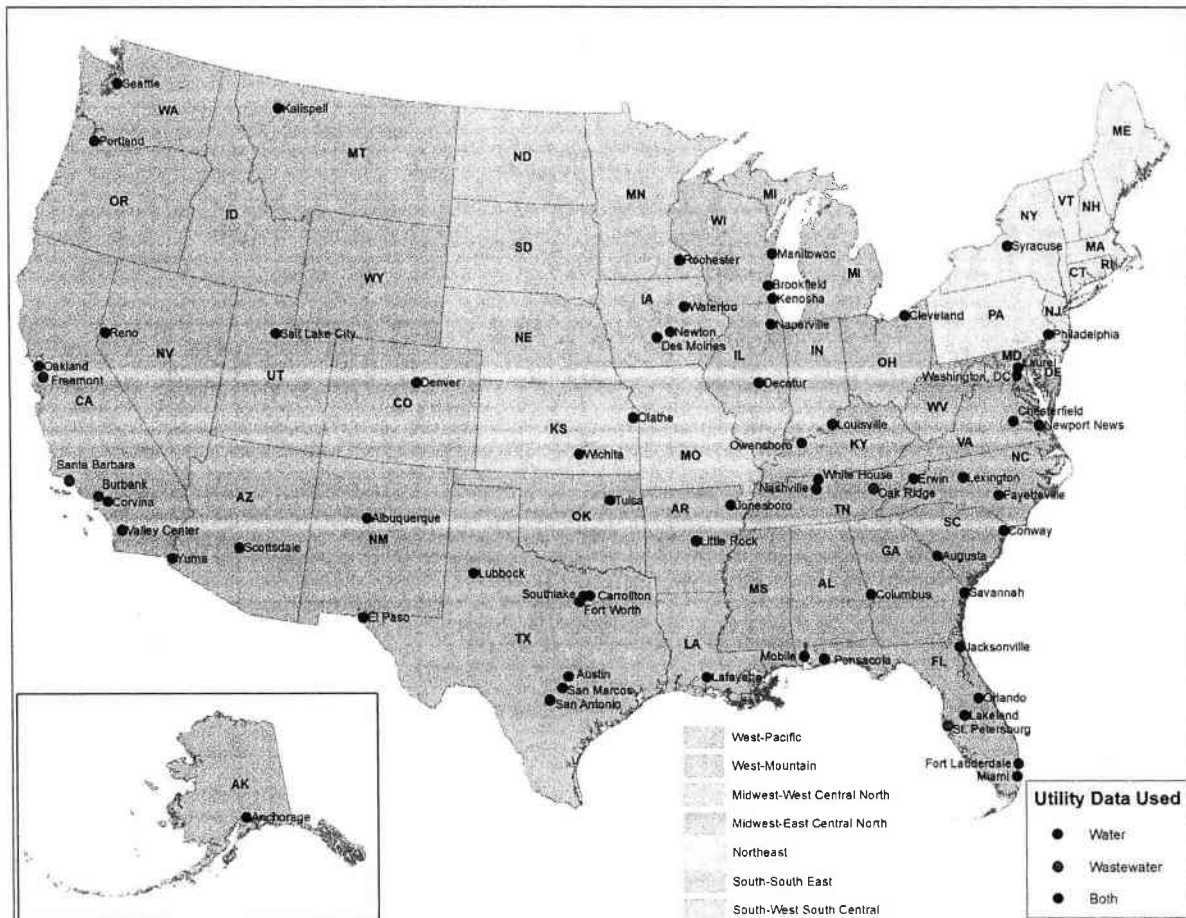


Figure E.1. Map of the United States Showing the Water and Wastewater Utilities in this Study

This report also provides guidance on how to develop localized water and wastewater price escalation rates for use in LCCA models. Although the preferred source for a forecast of annual water and wastewater price escalation rates is the local water or wastewater utility, suggestions are provided to develop alternative estimates when this local data is not available, which include relying on selected regional historical annual price escalation rates in this study.

1 Introduction

Pacific Northwest National Laboratory (PNNL) conducted this study for the U.S. Department of Energy's (DOE) Federal Energy Management Program to identify trends in annual water and wastewater price escalation rates across the United States. Determining appropriate forecasts of water and wastewater price escalation rates is necessary for life-cycle cost analysis (LCCA) of water projects; there is currently no publicly available comprehensive projection of price escalation rates for water and wastewater in the United States. While DOE's Energy Information Administration (EIA) forecasts future changes in energy prices, no governmental organization projects future changes in water and wastewater prices. Energy prices are significantly driven by commodity prices, whereas infrastructure projects often drive large variances in price escalations across water and wastewater service providers. The purpose of this analysis is to develop a sample set of water and wastewater annual price escalation rates from utilities throughout the U.S. to facilitate the appropriate integration of such factors in LCCAs of water efficiency projects.

2 Analysis Method

PNNL used the American Water Works Association (AWWA) water and wastewater rate surveys to gather historical rate data for water and wastewater utilities in the United States. This data was compiled and assessed to produce a single dataset of time series rate data for more than 60 water utilities and 40 wastewater utilities located throughout the United States. An annual price escalation rate was calculated for each utility based on the reported rates for the past 8 years.

2.1 Data Source

The AWWA is a nonprofit water-industry-focused association dedicated to providing information and solutions related to effective water management. The AWWA water and wastewater rate surveys collect information on the water and wastewater rates and associated fees and charges from communities across North America, inclusive of the United States, Canada, and Puerto Rico. Each survey breaks down the utilities surveyed by location, demand, and revenue received over the previous 2 years for both water services and wastewater services. Water services include collection and management of source water treatment to potable water standards, and distribution. Wastewater services include collection and treatment to permit requirements for discharge. To carry out this analysis, the results of the 2008, 2010, 2012, 2015, and 2016 AWWA water and wastewater rate surveys (AWWA and RFC 2008, 2010, 2012, 2015, 2016)¹ were compiled and examined.

Although participation in the survey is voluntary, in its most recent (2016) survey, AWWA collected water data from more than 260 water utilities and more than 180 wastewater utilities in 42 states. Using the AWWA survey results conducted and published over multiple years provided consistency to how the data was presented, and resulted in more time series results to include in this study than what was available in previous analyses (Giever 2010). Nevertheless, there are limitations to the AWWA data used in this study. Not all utilities that were asked to participate in the survey submitted data, and the set of utilities that provides data from one survey to the next often changes; thus, consistent sets of time series data are not available for many utilities. There are also inconsistencies related to the measurement units reported and manner in which a “rate” is defined from year to year. For example, a particular utility might include flat fees as part of a volume rate in one survey, but not include these fees in another survey. To address these issues, all data was reviewed for consistency. When abnormal data patterns were found, the data was either corrected with utility-specific sources or discarded from the sample set.

2.2 Water and Wastewater Data Compilation

The AWWA water and wastewater surveys from 2008, 2010, 2012, 2015, and 2016 were reviewed to find the water and wastewater rate trends for commercial and industrial customers. Utilities that responded to at least four AWWA surveys were identified to see how their rates changed over time. Location and utility information was imported into Microsoft Excel for further rate analysis. The AWWA datasets from 2008, 2010, and 2012 included a unique identifier for most utilities that allowed for a consistent mapping of the utilities from one survey year to the next. AWWA survey datasets from 2015 and 2016 did not include a unique identifier, so the mapping was done based on utility name and location. Utility name data was standardized to eliminate any inconsistencies between survey years.

Once the utilities with multiple survey responses were identified, their water and wastewater price data was converted to rates and standardized. The AWWA surveys bin customers based on water consumption, shown in Table 1, and have non-seasonal and peak price information for base charge, volume charge, and total monthly bill. Price data was converted to a marginal water and wastewater rate, presented in dollars per 1000 gallons (\$/kGal) by dividing the utility-provided price by the midpoint consumption of each consumption

¹ The 2016 AWWA water and wastewater rate survey is available at <https://www.awwa.org/resources-tools/water-and-wastewater-utility-management/water-wastewater-rates.aspx>. To access earlier versions of the water and wastewater rate surveys, please contact AWWA.

bin in gallons. The resulting water and wastewater rates were converted to 2016\$ using the Bureau of Economic Analysis implicit price deflators.²

Table 1. AWWA 2016 Water and Wastewater Survey Customer Class Bins

Customer Class	Water Meter Size	Consumption	
		Cubic Feet	Gallons
Residential	5/8 inch	0	0
Residential	5/8 inch	500	3,740
Residential	5/8 inch	1,000	7,480
Residential	5/8 inch	1,500	11,220
Residential	5/8 inch	3,000	22,440
Non-Residential/ Commercial	5/8 inch	3,000	22,440
Commercial/ Light Industrial	2 inch	50,000	374,000
Industrial	4 inch	1,000,000	7,480,000
Industrial	8 inch	1,500,000	11,220,000

Based on the data compilation and consistency checks conducted on the AWWA water and wastewater rate surveys, there were 68 water utilities and 43 wastewater utilities that had submitted at least 4 years of data. Some utilities did not submit data in the 2016 survey, but submitted data from 2008 to 2015. These utilities and their full raw data are provided in Appendix A.

2.3 Price Escalation Rate Derivation

To capture the true marginal cost of water and wastewater services over time, the analysis focused on volume-based charges. An effort was made to avoid fixed fees as part of the rate. It was determined that the 8-inch water meter size industrial consumer class reflected an appropriate commercial volumetric rate in most cases. This is because this class of consumer typically pays a relatively smaller portion of maintenance and infrastructure fees compared to the total volume of water and wastewater that they consume. This, in effect, dampens out the flat fixed fees and approximates more closely the marginal cost of water and wastewater. The rates per kGal in 2016\$³ are provided in Figure 1 and Figure 2 for 61 water utilities (Figure 1) and 39 wastewater utilities (Figure 2), ordered from lowest to highest rates per kGal. There is a large variation in rates across these utilities, likely due to infrastructure investment requirements. For example, the wastewater rate for Seattle is notably higher than for other cities analyzed in this study (see Figure 2), likely driven by Seattle's required investments to address sewage infrastructure and overflow into the Puget Sound (Thompson 2014).

² Bureau of Economic Analysis implicit price inflators can be found at: https://bea.gov/faq/index.cfm?faq_id=513.

³ In cases where 2016 data was not available, 2015 data was used.

Annual Water and Wastewater Price Escalation Rates

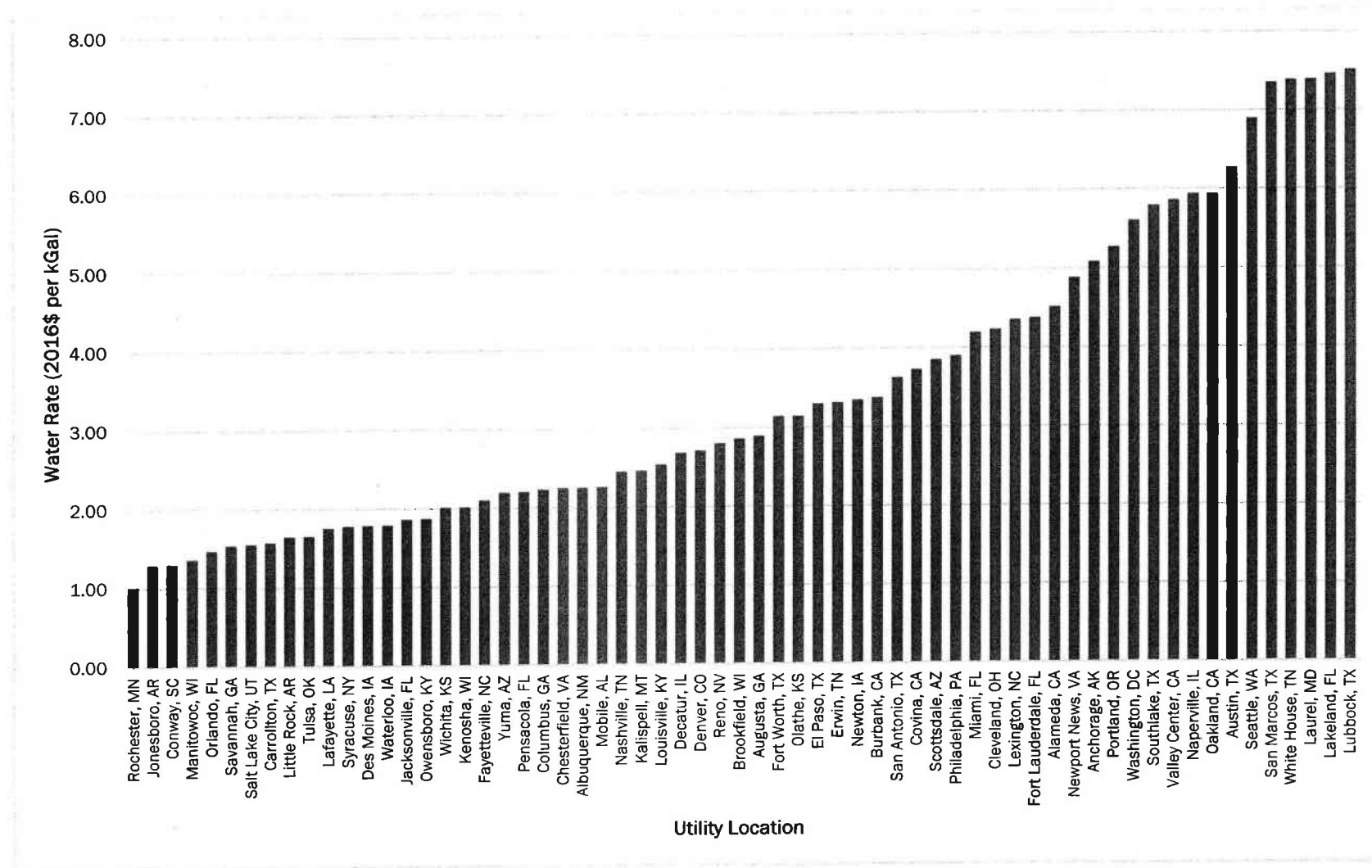


Figure 1. Water Rates for Water Utilities Included in this Study (2016\$)

Annual Water and Wastewater Price Escalation Rates

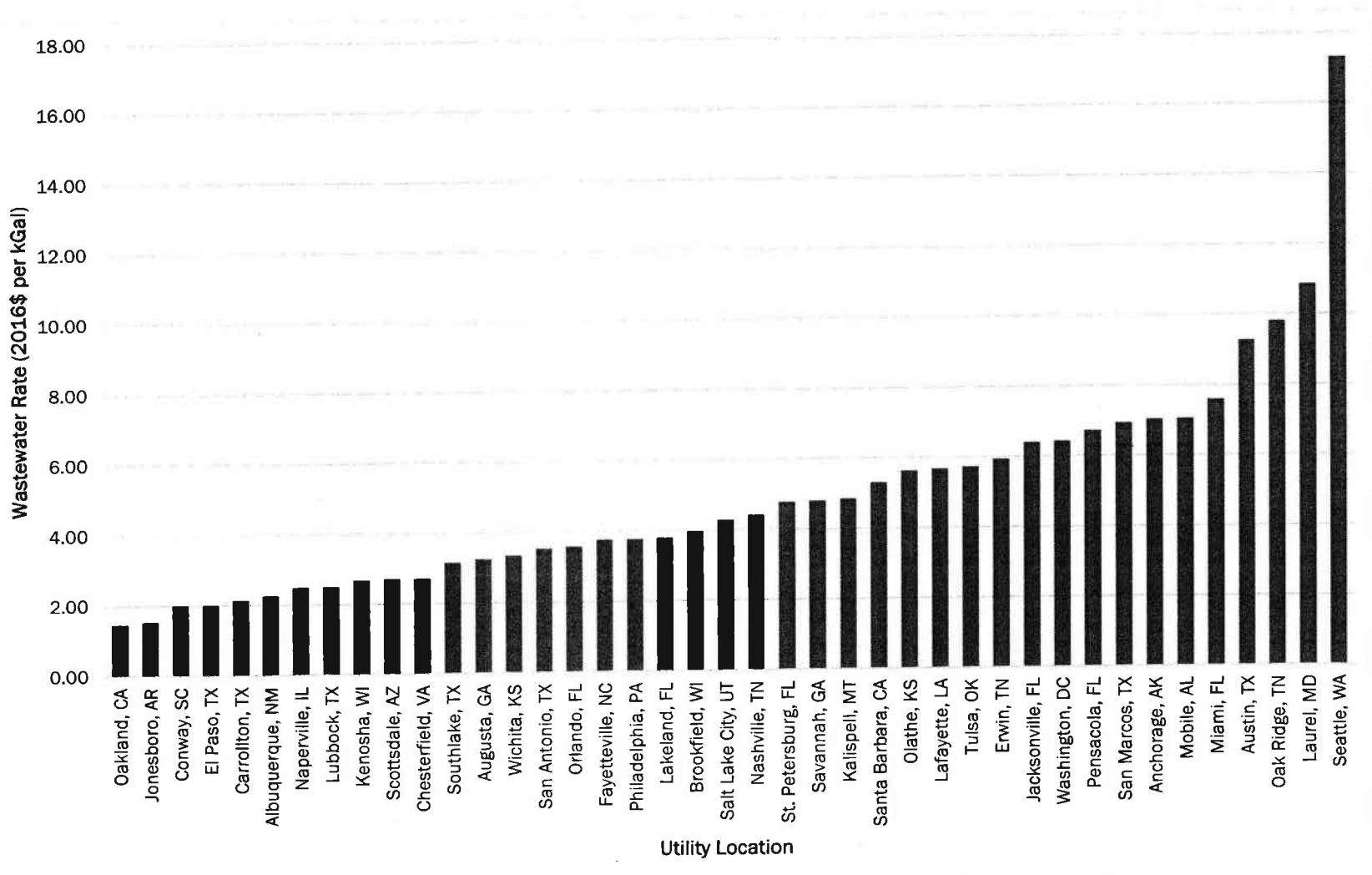


Figure 2. Wastewater Rates for Wastewater Utilities Included in this Study (2016\$)

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Figure 3 and Figure 4 provide the minimum and maximum rates, the average (mean) rates per kGal, and the standard deviation around the mean for three separate years: 2008, 2012, and 2016.

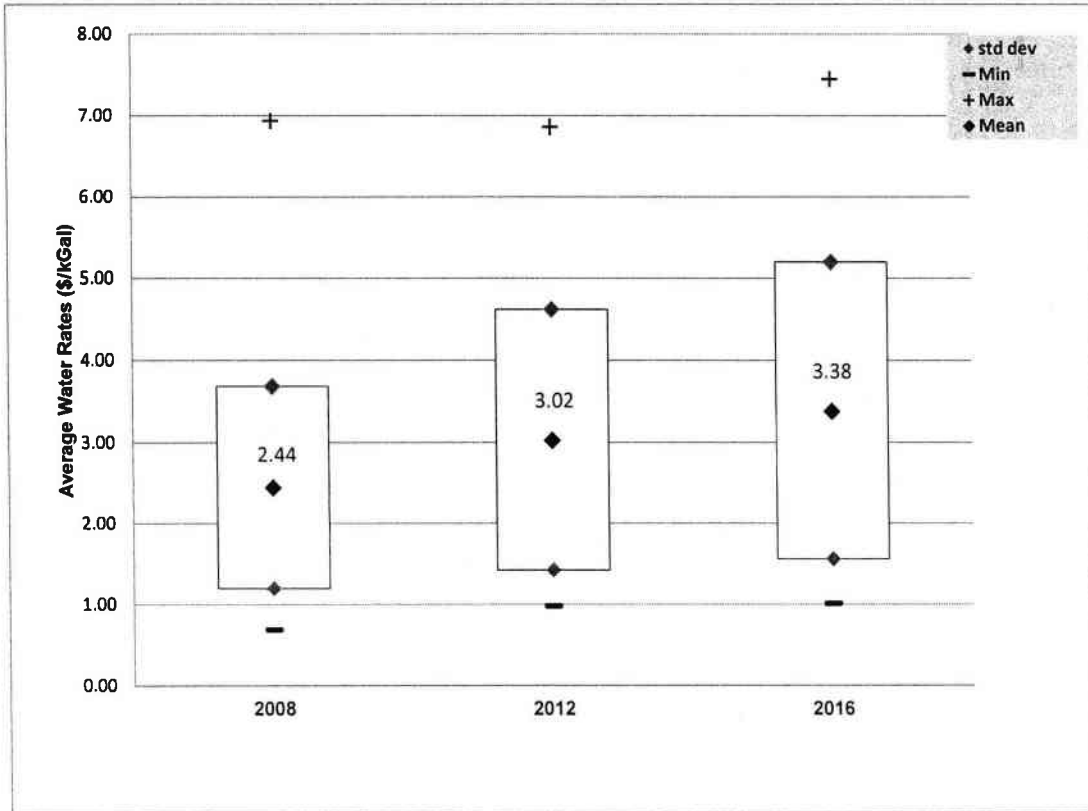


Figure 3. Survey Sample Average Water Rates over Time

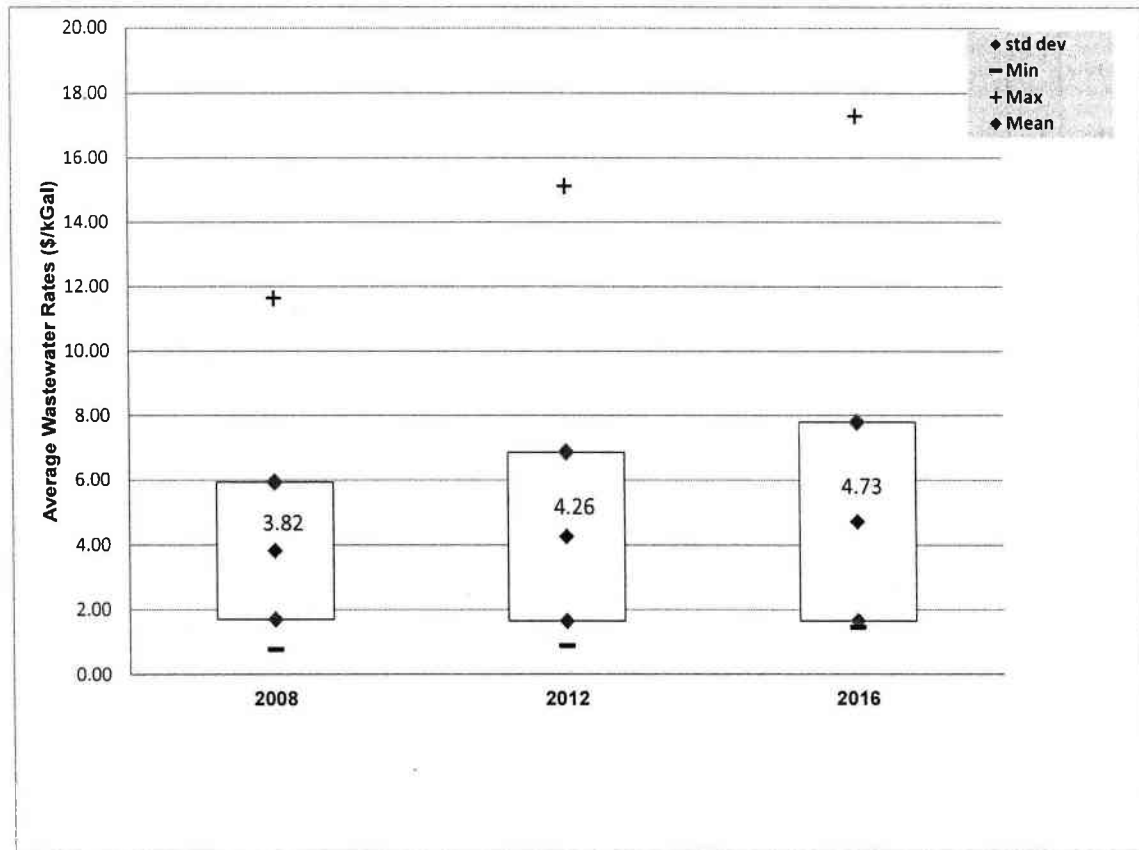


Figure 4. Survey Sample Average Wastewater Rates over Time

Figure 3 and Figure 4, over the 8-year timespan between 2008 and 2016, the average water rates across all utilities in the sample increased by nearly 40% while the average wastewater rates increased by 24%.

Annual Price Escalation Determination

The overall objective of this study was to estimate the annual price escalation rate for water and wastewater by examining these historical trends. The annual price escalation rates during this same period were calculated for these utilities based on a methodology that is used to calculate inflation rates. A price escalation rate identifies how much the water or wastewater price has changed annually between 2 specific years.⁴ The annual price average escalation rates were calculated using the following formula:

$$\text{Annual Average Price Escalation Rate} = \left(\frac{\text{Final Year Rate}}{\text{First Year Rate}} \right)^{\frac{1}{\text{Final Year} - \text{First Year}}} - 1$$

⁴ In this study, water and wastewater annual average escalation rates were calculated for several spans of time for comparison purposes: from 2008 to 2016, 2010 to 2016, and 2012 to 2016. It was determined that the 2008 to 2016 period provided the most robust and representative annual escalation rates; thus, these rates are reported for all sampled utilities in Table 2 and Table 3.

The results of applying the price escalation rate to the utility water and wastewater data is presented in Section 3 of this report. Figure 5 shows a map of the cities of each utility for which an annual price escalation rate is calculated. This map also shows U.S. regions that were used in the study to examine water rates regionally. Table 2 and Table 3 provide the annual price escalation rates for each utility examined, organized by region of the country.

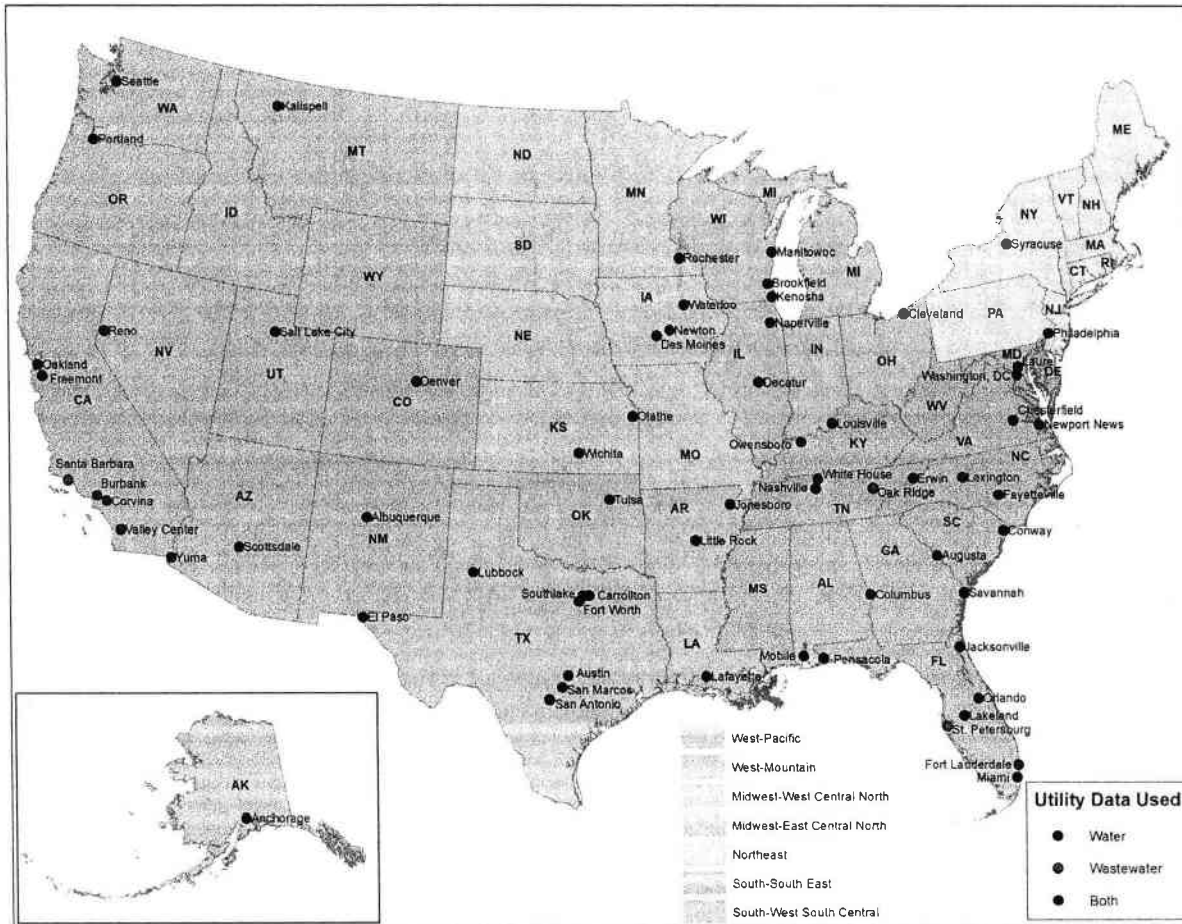


Figure 5. Map of the United States Showing the Water and Wastewater Utilities in This Study

3 Analysis Results

This section presents the average annual price escalation rate application analysis for both water and wastewater rates for each utility included in this analysis. It also includes summary statistics on regional rate trends, based on the sample of utilities examined.

3.1 Annual Water Price Escalation Rate Results

The calculated average annual price escalation rates for water utilities (based on historical rates from 2008 to 2016) are shown in Table 2 for each utility in the sample survey, organized by census region. Figure 6 shows the location of each water utility for which an annual price escalation rate is calculated.

Table 2. Annual Price Escalation Rates for Water Utilities in the United States

State	City	Water Utility	Annual Price Escalation Rate
West-Pacific			
AK	Anchorage	Anchorage Water and Wastewater Utility	2.45%
CA	Alameda	Alameda County Water District	2.91%
CA	Burbank	Burbank Water and Power	3.40%
CA	Covina	Suburban Water Systems	7.31%
CA	Oakland	East Bay Municipal Utility District	6.06%
CA	Valley Center	Valley Center Municipal Water District	5.90%
OR	Portland	Portland Water Bureau	6.82%
WA	Seattle	Seattle Public Utilities	7.26%
West-Mountain			
AZ	Scottsdale	City of Scottsdale	0.00%
AZ	Yuma	City of Yuma	0.42%
CO	Denver	Denver Water	2.00%
MT	Kalispell	City of Kalispell	-1.46%
NM	Albuquerque	Albuquerque Bernalillo County Water Utility Authority	0.78%
NV	Reno	Truckee Meadows Water Authority	0.14%
UT	Salt Lake City	Salt Lake City Corp Public Utilities	2.47%
Midwest-West North Central			
IA	Des Moines	Des Moines Water Works	4.53%
IA	Newton	Newton Water Works	9.87%
IA	Waterloo	Waterloo Water Works	8.33%
KS	Olathe	City of Olathe	2.64%

State	City	Water Utility	Annual Price Escalation Rate
KS	Wichita	City of Wichita	5.20%
MN	Rochester	Rochester Public Utilities	-0.35%
<i>Midwest-East North Central</i>			
IL	Decatur	City of Decatur	7.04%
IL	Naperville	City of Naperville Department of Public Utilities	15.25%
OH	Cleveland	Cleveland Division of Water	3.11%
WI	Brookfield	City of Brookfield	7.35%
WI	Kenosha	Kenosha Water Utility	2.34%
WI	Manitowoc	Manitowoc Public Utilities	1.03%
<i>Northeast</i>			
NY	Syracuse	Onondaga County Water Authority	10.62%
PA	Philadelphia	Philadelphia Water Department	6.66%
<i>South-South East</i>			
AL	Mobile	Mobile Area Water and Sewer	3.60%
DC	Washington, DC	District of Columbia Water and Sewer Authority	7.20%
FL	Fort Lauderdale	City of Fort Lauderdale	5.69%
FL	Jacksonville	JEA	7.06%
FL	Lakeland	City of Lakeland Water Utilities	3.49%
FL	Miami	Miami Dade Water and Sewer Department	6.58%
FL	Orlando	Orange County Utilities	0.39%
FL	Pensacola	Emerald Coast Utilities Authority	2.90%
GA	Augusta	Augusta Utilities	0.71%
GA	Columbus	Columbus Water Works	3.83%
GA	Savannah	City of Savannah	3.12%
KY	Louisville	Louisville Water Company	1.61%
KY	Owensboro	Owensboro Municipal Utilities	5.72%
MD	Laurel	Washington Suburban Sanitary Commission	6.95%
NC	Fayetteville	Fayetteville Public Works Commission	1.13%
NC	Lexington	Davidson Water Inc.	3.33%
SC	Conway	Grand Strand Water and Sewer Authority	0.09%

State	City	Water Utility	Annual Price Escalation Rate
TN	Erwin	Erwin Utilities	16.65%
TN	Nashville	Metro Water Services	0.66%
TN	White House	White House Utility District	4.15%
VA	Chesterfield	Chesterfield County Department of Utilities	2.38%
VA	Newport News	Newport News Waterworks	1.35%
<i>South-West South Central</i>			
AR	Jonesboro	City Water and Light	8.15%
AR	Little Rock	Central Arkansas Water	1.28%
LA	Lafayette	Lafayette Utilities System	2.30%
OK	Tulsa	Tulsa Metropolitan Utility Authority	0.88%
TX	Austin	Austin Water Utility	6.09%
TX	Carrollton	City of Carrollton	-0.62%
TX	El Paso	El Paso Water	0.51%
TX	Fort Worth	Fort Worth Water Department	2.64%
TX	Lubbock	City of Lubbock	13.58%
TX	San Antonio	San Antonio Water System	2.10%
TX	San Marcos	City of San Marcos	0.72%
TX	Southlake	City of Southlake	3.25%

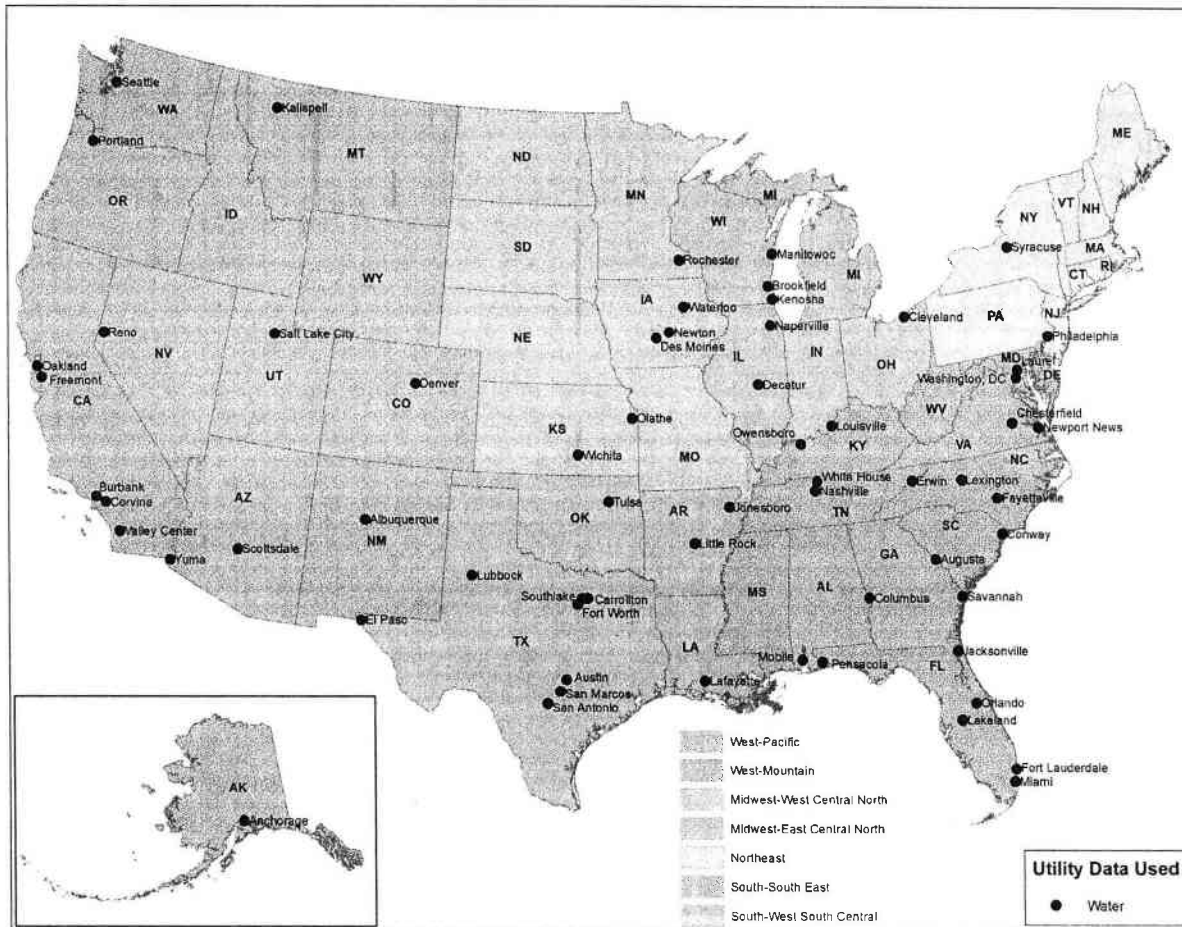


Figure 6. Map of the United States Showing the Water Utilities in This Study

Across the entire survey sample examined in this report, the average annual price escalation rate for water is 4.1% based on reported rates from 2008 through 2016. The highest price escalation rates were reported from Erwin, Tennessee (16.65%), and Naperville, Illinois (15.25%), while de-escalation in rates was reported for Kalispell, Montana (-1.46%), Carrollton, Texas (-0.62%), and Rochester, Minnesota (-0.35%). Figure 7 and Figure 8 provide summary statistics by region for water price escalation rates and commercial water rates for the utilities in the survey sample.

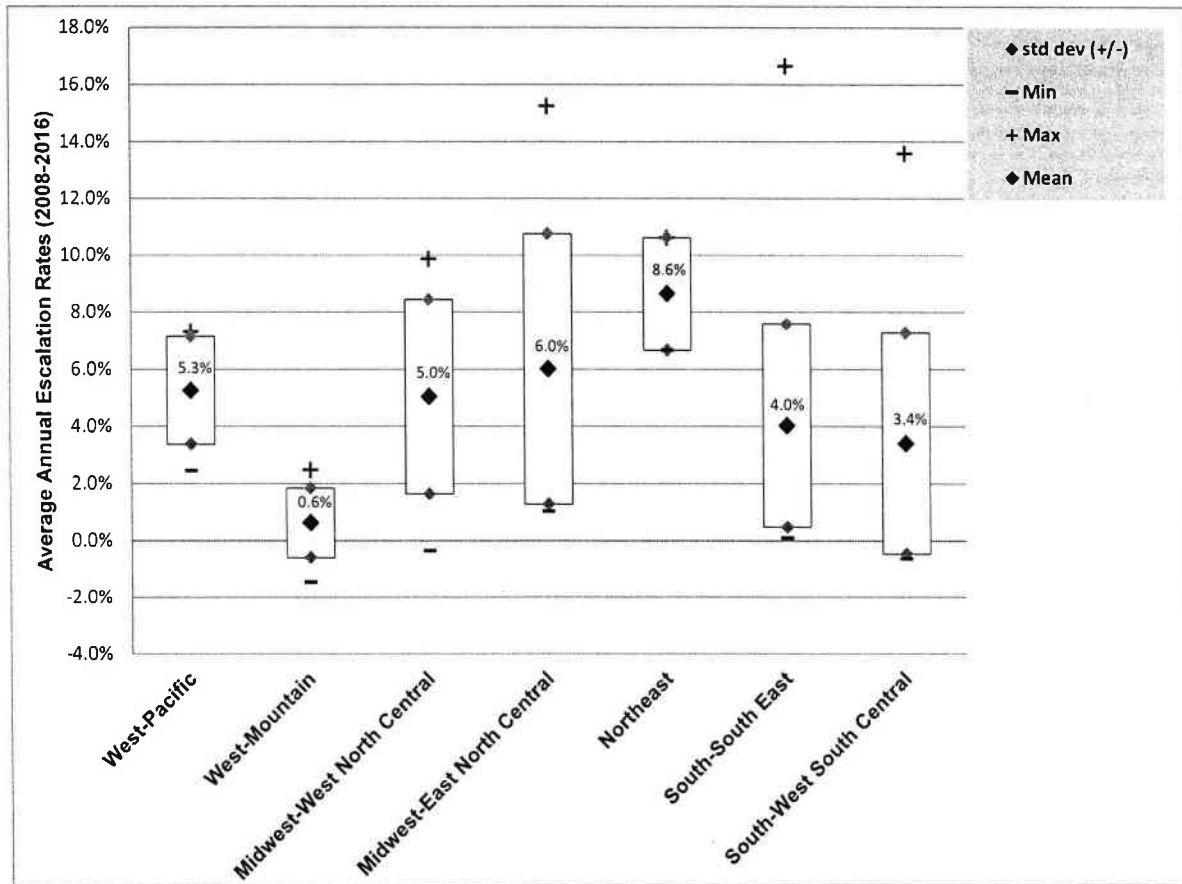


Figure 7. Average Annual Water Price Escalation Rates by Region (2008-2016)

Some regional trends are observed; however, it is important to note that regional sampling is variable and limited. For example, the Northeast region is represented by only two utilities. Based on the utilities observed, it would appear that the Midwest and Northeast have some of the lowest average water rates (see Figure 8)⁵; however, Figure 7 would suggest that these same regions have had some of the highest annual price escalation rates in recent years. Conversely, although the West-Pacific states have the highest average regional water rates (see Figure 8), the annual price escalation rate, at 5.3% (see Figure 7), is only slightly higher than the entire sample average of 4.1%. There is a wide range and variability in both water volume rates and historical price escalation rates across the southern utilities observed in this study, with an average escalation of about 3.5% across the entire southern region. The study's scope did not include an investigation into why such a large variation exists, but these variations are often driven by local infrastructure investments by the given utility (Walton 2017).

⁵ Since some water utilities included in this analysis did not complete the 2016 AWWA survey, the 2015 data for all water utilities was used for Figure 8.

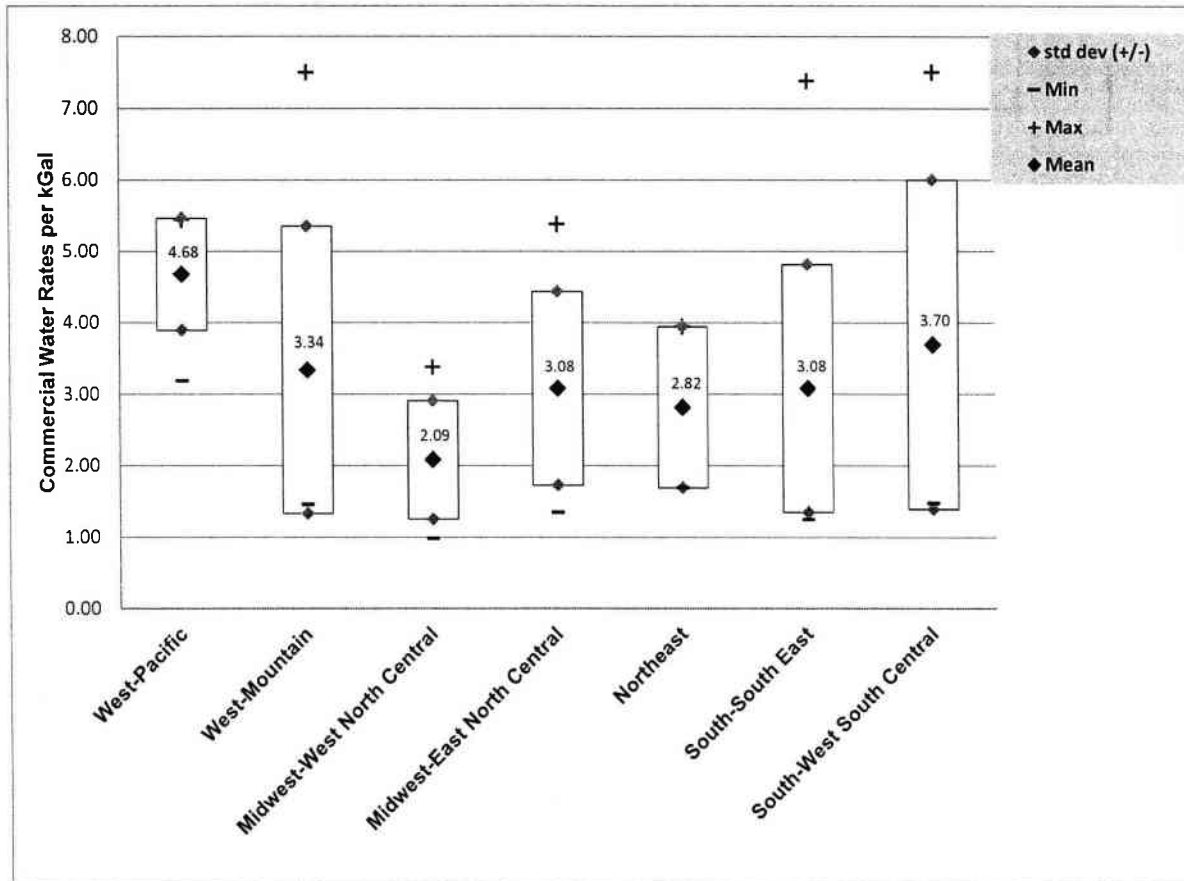


Figure 8. Average Commercial Water Rates by Region (2015)

3.2 Annual Wastewater Price Escalation Rate Results

The calculated average annual price escalation rates for wastewater utilities (based on historical rates from 2008 to 2016) are shown in Table 3 for each utility in the survey sample, organized by census region. Figure 9 shows the location of each wastewater utility for which an annual price escalation rate is calculated.

Table 3. Annual Price Escalation Rates for Wastewater Utilities in the United States

State	City	Wastewater Utility	Annual Price Escalation Rate
<i>West-Pacific</i>			
AK	Anchorage	Anchorage Water and Wastewater Utility	3.86%
CA	Oakland	East Bay Municipal Utility District	8.33%
CA	Santa Barbara	City of Santa Barbara	3.12%
WA	Seattle	Seattle Public Utilities	5.08%
<i>West-Mountain</i>			
AZ	Scottsdale	City of Scottsdale	-2.09%
MT	Kalispell	City of Kalispell	0.41%
NM	Albuquerque	Albuquerque Bernalillo County Water Utility Authority	0.09%

State	City	Wastewater Utility	Annual Price Escalation Rate
UT	Salt Lake City	Salt Lake City Corp Public Utilities	3.71%
<i>Midwest-West North Central</i>			
KS	Olathe	City of Olathe	5.44%
KS	Wichita	City of Wichita	5.19%
<i>Midwest-East North Central</i>			
IL	Naperville	City of Naperville Department of Public Utilities	3.83%
WI	Brookfield	City of Brookfield	1.14%
WI	Kenosha	Kenosha Water Utility	-0.66%
<i>Northeast</i>			
PA	Philadelphia	Philadelphia Water Department	4.40%
<i>South-South East</i>			
AL	Mobile	Mobile Area Water and Sewer	4.95%
DC	Washington, DC	District of Columbia Water and Sewer Authority	4.09%
FL	Jacksonville	JEA	2.29%
FL	Lakeland	City of Lakeland Water Utilities	3.52%
FL	Miami	Miami Dade Water and Sewer Department	3.85%
FL	Orlando	Orange County Utilities	0.04%
FL	Pensacola	Emerald Coast Utilities Authority	2.89%
FL	St. Petersburg	City of St. Petersburg	2.24%
GA	Augusta	Augusta Utilities	1.07%
GA	Savannah	City of Savannah	4.07%
MD	Laurel	Washington Suburban Sanitary Commission	5.58%
NC	Fayetteville	Fayetteville Public Works Commission	0.62%
SC	Conway	Grand Strand Water and Sewer Authority	0.16%
TN	Erwin	Erwin Utilities	9.99%
TN	Nashville	Metro Water Services	1.83%
TN	Oak Ridge	City of Oak Ridge	2.73%
VA	Chesterfield	Chesterfield County Department of Utilities	4.05%
<i>South-West South Central</i>			
AR	Jonesboro	City Water and Light	8.30%

State	City	Wastewater Utility	Annual Price Escalation Rate
LA	Lafayette	Lafayette Utilities System	3.67%
OK	Tulsa	Tulsa Metropolitan Utility Authority	7.59%
TX	Austin	Austin Water Utility	3.39%
TX	Carrollton	City of Carrollton	-0.40%
TX	El Paso	El Paso Water	0.55%
TX	Lubbock	City of Lubbock	2.74%
TX	San Antonio	San Antonio Water System	6.10%
TX	San Marcos	City of San Marcos	-0.56%
TX	Southlake	City of Southlake	-0.83%

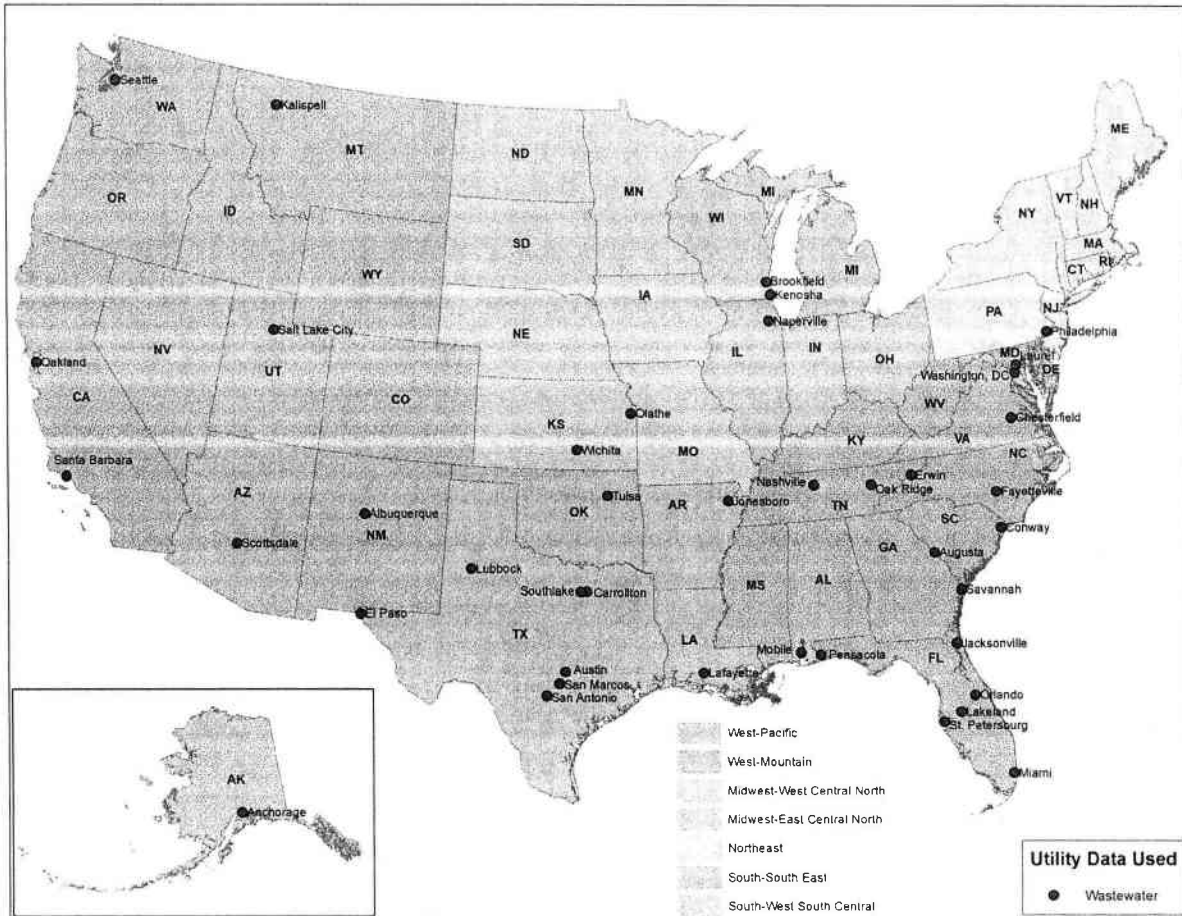


Figure 9. Map of the United States Showing the Wastewater Utilities in This Study

Across the entire survey sample examined in this report, the average annual price escalation rate for wastewater is 3.3% based on reported rates from 2008 through 2016. As with the water rates, the highest

wastewater price escalation rates were reported for Erwin Utilities of Tennessee (9.99%), while de-escalation in rates were reported for five utilities, three of which are located in Texas (see Carrollton, Southlake, and San Marcos in Table 3). Figure 10 and Figure 11 provide summary statistics by region for wastewater price escalation rates and commercial wastewater rates for the utilities in the survey sample. Since 2008, the region that has experienced the highest annual price escalation rates in wastewater is the Midwest–West Central North region; however, this region was only represented by two utilities. In general, the price escalation rates for wastewater do not vary across the utilities and regions as much as water rates. The West-Mountain states have had the greatest variability around the mean average annual price escalation rate of 2.8%. The West - Pacific region has the highest average marginal rates for wastewater (see Figure 11)⁶ and also has one of the highest price escalation rates (see Figure 10) based on historical rates from 2008 through 2016.

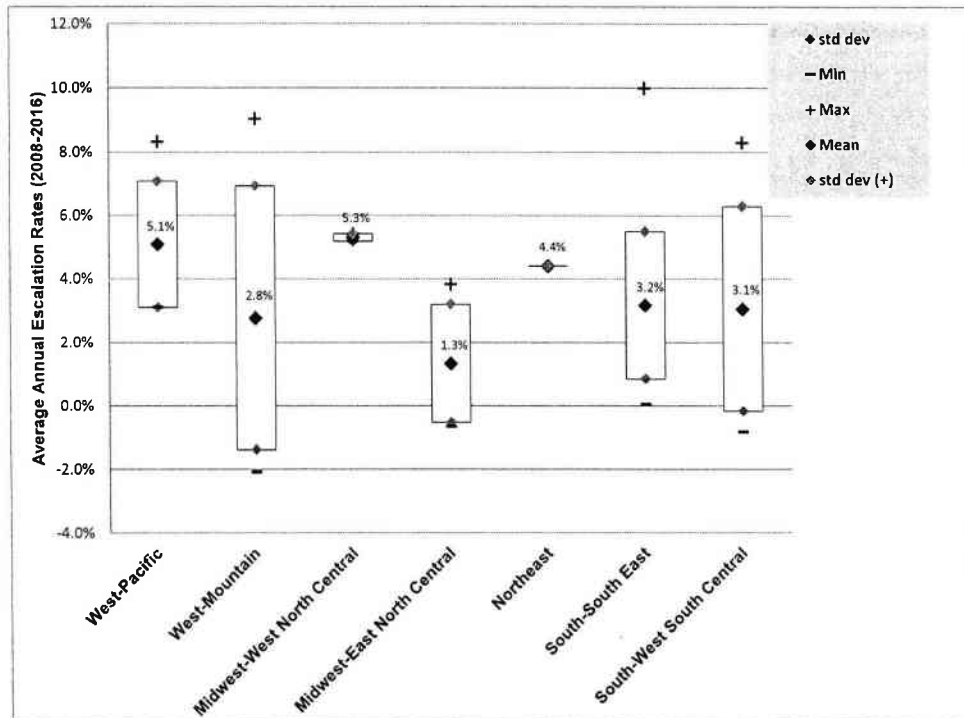


Figure 10. Average Annual Wastewater Price Escalation Rates by Region (2008-2016)

⁶ Since some wastewater utilities included in this analysis did not complete the 2016 AWWA survey, the 2015 data for all wastewater utilities was used for Figure 11.

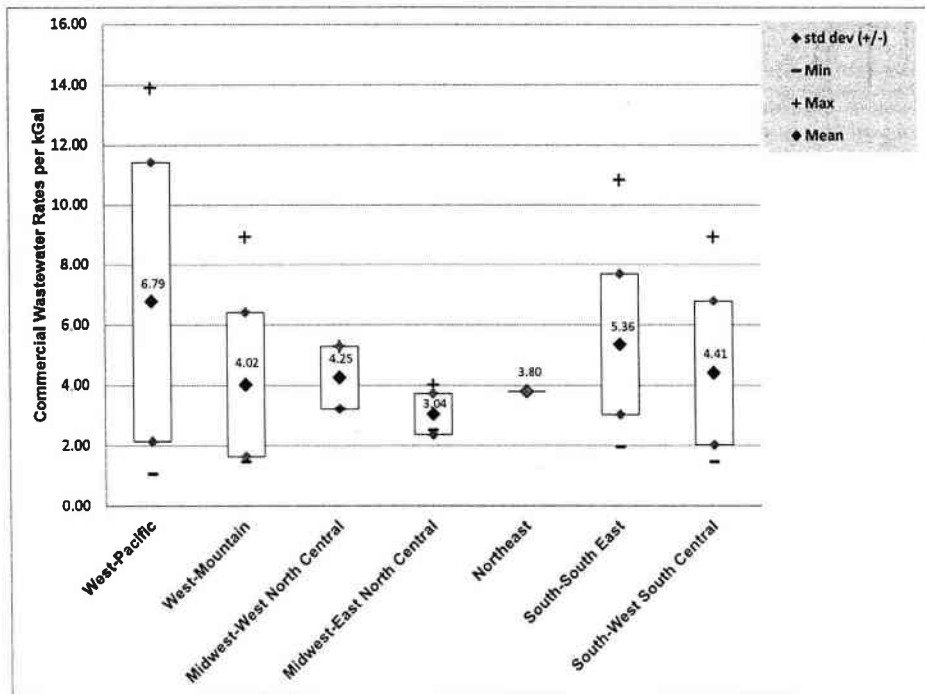


Figure 11. Average Commercial Wastewater Rates by Region (2015)

4 Annual Water and Wastewater Price Escalation Rates for Use in Life-Cycle Cost Analysis

Annual water and wastewater price escalation rates are needed in LCCAs to estimate the overall cost savings of water efficiency projects. However, determining appropriate forecasts of water and wastewater price escalation rates can be more difficult than ascertaining comparable rates for various forms of energy. While the EIA forecasts future changes in energy prices, no governmental organization projects future changes in water and sewer prices. Energy prices are also significantly driven by commodity prices, whereas infrastructure projects often drive large variances in price escalations across water and sewer service providers.

The preferred source for a forecast of annual water and wastewater price escalation rates is the local water or wastewater utility. The serving utility can be contacted to determine if there are any forecasts of future water and wastewater rate changes, whether published or via a written statement or other documentation from the utility. If possible, obtain year-specific price escalation rates, rather than a multi-year average, for use in the LCCA. The Building Life Cycle Cost program,⁷ for example, allows entry of such year-specific rates.

Absent a forecast from the serving water or wastewater utility, the next recommended method for forecasting water and wastewater prices is to look to past local rate changes as a general prediction of future rate changes. To determine historical annual rates of change, collect at least 5 years of past billing statements or rate data from the local utility and use the equation presented in Section 2.3 of this document to calculate an average annual price escalation rate. Other important guidelines for this option include the following:

- When directly calculating the average annual price escalation rates, make sure to use *marginal rates* (typically \$/kGal or \$/100 ft³) rather than *average rates*. Do not simply take a bill total and divide it by total usage to obtain an average rate. Rather, obtain the volumetric charge for water (and wastewater, as relevant), which should be stated on the bill or provided by the serving utility in their rate schedule. In some cases, the average and marginal rates can differ tremendously, and water efficiency projects avoid costs at the marginal rates.
- If monthly rates differ within a calendar year, choose the historical rates from the same month of each year. For example, choose the rates from January or December of each year.
- Finally, calculate water and wastewater price escalation rates separately.

If past billing data is not available and the local utility cannot provide price escalation rates, the results of this study may be used to approximate rates of price escalation. When relying on price escalation rates from this analysis, the analyst may use differing criteria to select appropriate rates, depending on the type of project and region in which the water efficiency project is located. For example, in some cases it might be appropriate to find utilities in a similar region and/or perhaps of a similar size. In other cases, the analyst might consider the base volumetric water rate when selecting a representative price escalation rate. Statistics on these characteristics are provided in Sections 3.1 and 3.2 of this report to assist with this selection process.

While the historical price escalation rates presented in this report could help inform a regional LCCA study, it is important to note the limitations and caveats of this dataset:

- *Limited Sample:* The sample size is limited, and the data does not reflect a balanced geographic distribution, nor does it represent some of the more populous cities throughout the U.S. In some cases, a region is represented by only one or two utilities.

⁷ Information about the Building Life Cycle Cost program can be found at <https://energy.gov/eere/femp/building-life-cycle-cost-programs>

- *Rate Definition Variability and Time Series Consistency:* Although an effort was made to compile clean datasets for a sample of utilities across the U.S., as discussed in Section 2.1 of this report, the AWWA survey is voluntary and often is completed by different utilities, people, and/or departments from year to year. Thus, consistency issues can arise related to the manner in which “a rate” is defined from one survey to the next. Utility rate structures and customer classifications may also change over time, which also poses consistency issues in the time-series data.

Historical Data, Utility Specificity: In general, historical water and wastewater price escalation rates can help provide useful forecasts of future price escalation rates; however, history is never a perfect predictor of the future. All data observed in this analysis is historical data and may or may not be an appropriate indication of future rates, depending on the circumstances for a given utility. Appropriate price escalation rates may be very specific to a utility, given that infrastructure projects may be primary drivers of costs for water and wastewater utilities, but may return to lower rates once infrastructure projects are completed. If utility- or region-specific options for price escalation rates are not viable, another option to consider is to use historical, national-level Consumer Price Index (CPI) data maintained by the Bureau of Labor Statistics (BLS)⁸ to serve as a basis for an estimate of future price increases. Included as a component of the overall CPI is “water and sewerage maintenance.” For the most recent 20 years of data (1996-2016), the national average annual price increase for water and sewerage maintenance has been 4.71%, for example.⁹ As a point of comparison, economy-wide inflation, as measured by the BLS CPI-U All Items index, has run 2.15% over the same period.

⁸ Bureau of Labor Statistics, Consumer Price Index: <https://www.bls.gov/cpi/home.htm>.

⁹ While water and sewerage maintenance price increases have often been higher than 4.71% in recent years, utilizing a relatively long period (e.g., 20 years) helps to dampen year-to-year swings in prices, and provides a long-term average. See *Trends in Consumer Prices (CPI) for Utilities through 2015* (Beecher 2016) from Michigan State University’s [Institute of Public Utilities](#), for more information on and numerous charts conveying historical trends.

References

- AWWA and RFC (2009). *2008 Water and Wastewater Rate Survey*. Denver, CO: American Water Works Association and Raftelis Financial Consultants, Inc.
- AWWA and RFC (2011). *2010 Water and Wastewater Rate Survey*. Denver, CO: American Water Works Association and Raftelis Financial Consultants, Inc.
- AWWA and RFC (2013). *2012 Water and Wastewater Rate Survey*. Denver, CO: American Water Works Association and Raftelis Financial Consultants, Inc.
- AWWA and RFC (2015). *2015 Water and Wastewater Rate Survey*. Denver, CO: American Water Works Association and Raftelis Financial Consultants, Inc.
- AWWA and RFC (2017). *2016 Water and Wastewater Rate Survey*. Denver, CO: American Water Works Association and Raftelis Financial Consultants, Inc.
- Beecher, J.A. (2016). *IPU Research Note: Trends in Consumer Prices (CPI) for Utilities through 2015*. East Lansing, MI: Michigan State University, Institute of Public Utilities Regulatory Research and Education: [http://ipu.msu.edu/wp-content/uploads/research/pdfs/IPU%20Consumer%20Price%20Index%20for%20Utilities%202015%20\(2016\).pdf](http://ipu.msu.edu/wp-content/uploads/research/pdfs/IPU%20Consumer%20Price%20Index%20for%20Utilities%202015%20(2016).pdf).
- Giever, E., McMordie Stoughton, K., and Loper, S. (2010). *Analysis of Water Rate Escalations across the United States*. Washington, D.C.: U.S. Department of Energy: https://www.energy.gov/sites/prod/files/2013/10/f3/pnnl_80989.pdf.
- Thompson, L. (2014). "Seattle City Council Okays Higher Utility Rates." *The Seattle Times*, August 12, 2014: <http://www.seattletimes.com/seattle-news/seattle-city-council-oks-higher-utility-rates/>.
- Walton, B. (2017). "Price of Water 2017: Four Percent Increase in 30 Large U.S. Cities." *Circle of Blue*, May 18, 2017: <http://www.circleofblue.org/2017/water-management/pricing/price-water-2017-four-percent-increase-30-large-u-s-cities/>.

Appendix A: Water and Wastewater Utility Rates

This appendix contains the data associated with the utilities that contributed to at least four American Water Works Association water and wastewater rate surveys. Table A.1 shows the water rates in 2016\$ for the volume charge of the large industrial consumers with an 8-inch water meter. Table A.2 shows the wastewater rates in 2016\$ for the volume charge of the large industrial consumers with an 8-inch wastewater meter.

Table A.1. Water Utility Volume Charge in 2016\$ per kGal for Large Industrial Consumers

Water Utility	State	Volume Charge in 2016\$ per kGal for 8" Water Meter				
		2008	2010	2012	2015	2016
Anchorage Water and Wastewater Utility	AK	4.19	4.50	4.68	5.14	5.08
Mobile Area Water and Sewer	AL	1.70	1.89	1.88	2.18	2.26
City Water and Light	AR	0.69	0.88	1.01	1.53	1.29
Central Arkansas Water	AR	1.49	1.62	1.63	1.67	1.64
City of Yuma	AZ	2.12	2.27	2.18	2.09	2.19
City of Scottsdale	AZ	3.85	4.36	4.19	3.75	3.85
Burbank Water and Power	CA	2.58	3.00	2.89	3.19	3.37
Suburban Water Systems	CA	2.12	2.36	3.14	3.69	3.73
Alameda County Water District	CA	3.58	4.05	4.46	4.60	4.51
Valley Center Municipal Water District	CA	3.70	4.34	5.23	5.44	5.85
East Bay Municipal Utility District	CA	3.71	4.00	4.40	5.36	5.94
Denver Water	CO	2.31	1.63	1.88	1.86	2.71
District of Columbia Water and Sewer Authority	DC	3.21	3.69	4.59	5.25	5.60
Orange County Utilities	FL	1.43	1.49	1.47	1.45	1.47
JEA	FL	1.08	1.55	1.96	1.88	1.86
Miami Dade Water and Sewer Department	FL	4.48	4.90	6.47	5.00	7.45
City of Fort Lauderdale	FL	2.81	3.63	3.91	4.19	4.37
Emerald Coast Utilities Authority	FL	1.81	1.96	2.17	2.21	-
City of Lakeland Water Utilities	FL	1.67	1.75	1.83	2.18	2.20
Columbus Water Works	GA	1.65	1.47	1.81	1.98	2.23
City of Savannah	GA	1.20	1.35	1.40	1.45	1.54
Augusta Utilities	GA	2.75	2.86	2.84	2.89	-
Des Moines Water Works	IA	1.25	1.39	1.66	1.70	1.79
Waterloo Water Works	IA	0.94	1.30	1.39	1.56	1.79
Newton Water Works	IA	1.57	1.55	2.46	3.38	3.34
City of Naperville Department of Public Utilities	IL	1.91	2.76	3.47	5.38	5.93
City of Decatur	IL	1.67	1.88	2.08	2.68	-
City of Wichita	KS	1.34	1.35	1.61	1.93	2.01
City of Olathe	KS	2.55	2.68	2.75	2.95	3.14
Owensboro Municipal Utilities	KY	1.19	1.47	1.62	1.80	1.86
Louisville Water Company	KY	2.23	2.44	2.43	2.47	2.53
Lafayette Utilities System	LA	1.46	1.43	1.85	1.77	1.75
Washington Suburban Sanitary Commission	MD	4.61	5.59	6.86	7.38	-
Rochester Public Utilities	MN	1.04	1.02	0.98	0.98	1.01
City of Kalispell	MT	2.73	2.67	2.57	2.46	-
Fayetteville Public Works Commission	NC	1.92	2.03	2.05	2.11	2.10
Davidson Water Inc.	NC	3.35	3.98	4.00	4.41	4.35
Albuquerque Bernalillo County Water Utility Authority	NM	2.11	2.07	2.20	2.20	2.25
Truckee Meadows Water Authority	NV	2.77	3.08	2.97	2.84	2.80
Onondaga County Water Authority	NY	0.79	1.53	1.72	1.69	1.77
Cleveland Division of Water	OH	3.41	3.96	3.90	4.23	-
Tulsa Metropolitan Utility Authority	OK	1.54	1.13	1.79	1.48	1.65
Portland Water Bureau	OR	3.11	3.59	4.37	4.66	5.27

Utility (Location)	Volume Charge in 2016\$ per kGal for 8" Water Meter					
	State	2008	2010	2012	2015	2016
Water Utility						
Philadelphia Water Department	PA	2.32	2.97	3.48	3.94	3.89
Grand Strand Water and Sewer Authority	SC	1.29	1.27	1.27	1.26	1.30
Erwin Utilities	TN	0.97	1.43	1.93	2.76	3.31
Metro Water Services	TN	2.34	2.41	2.56	2.45	-
White House Utility District	TN	5.33	6.08	6.84	6.97	7.38
Austin Water Utility	TX	3.91	4.33	4.97	6.25	6.27
City of Carrollton	TX	1.65	1.67	1.61	1.59	1.57
Fort Worth Water Department	TX	2.55	2.65	2.96	2.91	3.14
El Paso Water	TX	3.17	3.10	4.66	-	3.30
San Antonio Water System	TX	3.07	1.90	3.34	3.43	3.62
City of Southlake	TX	4.48	4.64	4.90	5.48	5.79
City of San Marcos	TX	6.94	6.79	6.74	7.08	7.34
City of Lubbock	TX	3.08	6.52	6.27	7.50	-
Salt Lake City Corp Public Utilities	UT	1.28	1.29	1.32	1.46	1.55
Chesterfield County Department of Utilities	VA	1.86	1.82	1.87	2.15	2.25
Newport News Waterworks	VA	4.38	4.47	4.70	4.94	4.88
Seattle Public Utilities	WA	3.93	5.15	5.72	5.34	6.89
Kenosha Water Utility	WI	1.67	1.74	1.69	1.98	2.01
City of Brookfield	WI	1.74	1.70	2.82	2.86	-
Manitowoc Public Utilities	WI	1.26	1.20	1.30	1.35	-

Table A.2. Wastewater Utility Volume Charge in 2016\$ per kGal for Large Industrial Consumers

Utility (Location)	Volume Charge in 2016\$ per kGal for 8" Wastewater Meter					
	State	2008	2010	2012	2015	2016
Wastewater Utility						
Anchorage Water and Wastewater Utility	AK	5.19	5.55	4.51	7.11	7.02
Mobile Area Water and Sewer	AL	4.78	5.89	5.84	6.78	7.04
City Water and Light	AR	0.81	1.07	1.17	1.47	1.53
City of Scottsdale	AZ	3.20	2.92	2.81	2.83	2.70
City of Santa Barbara	CA	4.14	4.22	4.83	5.08	5.29
East Bay Municipal Utility District	CA	0.77	0.87	0.88	1.07	1.46
District of Columbia Water and Sewer Authority	DC	4.85	5.31	5.61	6.42	-
City of St. Petersburg	FL	4.00	4.12	4.36	4.66	4.77
Emerald Coast Utilities Authority	FL	5.50	5.93	6.60	6.71	-
JEA	FL	5.33	5.82	6.46	6.47	6.39
Miami Dade Water and Sewer Department	FL	5.60	6.17	6.59	6.30	7.58
Orange County Utilities	FL	3.56	3.60	3.57	3.51	3.57
City of Lakeland Water Utilities	FL	2.87	3.26	3.25	3.66	3.79
Augusta Utilities	GA	3.01	3.13	3.10	3.24	-
City of Savannah	GA	3.48	4.22	2.08	4.50	4.79
City of Naperville Department of Public Utilities	IL	1.83	1.80	2.48	2.50	2.47
City of Olathe	KS	3.68	3.97	4.43	5.29	5.61
City of Wichita	KS	2.22	2.29	2.86	3.21	3.33
Lafayette Utilities System	LA	4.24	4.16	5.99	5.73	5.66
Washington Suburban Sanitary Commission	MD	7.41	8.27	8.79	10.84	-
City of Kalispell	MT	4.70	4.61	4.44	4.84	-
Fayetteville Public Works Commission	NC	3.57	3.83	3.71	3.59	3.75
Albuquerque Bernalillo County Water Utility Authority	NM	1.12	1.15	1.72	1.58	2.24
Tulsa Metropolitan Utility Authority	OK	3.42	3.92	4.52	5.71	-
Philadelphia Water Department	PA	2.66	3.02	3.13	3.80	3.75

Wastewater Utility	State	Volume Charge in 2016\$ per kGal for 8" Wastewater Meter				
		2008	2010	2012	2015	2016
Grand Strand Water and Sewer Authority	SC	1.96	1.93	1.96	1.95	1.99
City of Oak Ridge	TN	7.90	7.70	7.75	9.92	9.80
Erwin Utilities	TN	2.76	2.98	3.79	5.45	5.92
Metro Water Services	TN	3.89	4.15	4.61	4.41	-
Austin Water Utility	TX	7.09	7.31	8.27	8.93	9.26
City of Carrollton	TX	2.19	2.22	2.14	2.15	2.12
City of Lubbock	TX	2.05	2.26	2.17	2.48	-
City of San Marcos	TX	7.24	7.10	7.00	6.94	6.92
City of Southlake	TX	3.37	3.30	3.18	3.04	3.15
El Paso Water	TX	1.91	1.68	1.67	-	1.99
San Antonio Water System	TX	2.19	2.26	2.77	3.20	3.52
Salt Lake City Corp Public Utilities	UT	3.20	1.94	1.95	4.01	4.28
Chesterfield County Department of Utilities	VA	1.97	2.13	2.12	2.63	2.70
Seattle Public Utilities	WA	11.63	13.21	15.12	13.91	17.29
City of Brookfield	WI	3.70	3.63	3.81	4.01	3.96
Kenosha Water Utility	WI	2.81	2.84	2.73	2.61	2.66



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DOE/EE-1670 • September 2017

ASSET PURCHASE AGREEMENT

THIS AGREEMENT, made as of the 24th day of August, 1999, by and between United Water Pennsylvania Inc., a corporation organized and existing pursuant to the laws of the State of Pennsylvania ("Purchaser" or "UWPA"), and The Susquehanna Area Regional Airport Authority, a public authority established under the laws of the State of Pennsylvania ("Seller" or "SARAA").

RECITALS

A. Seller is a municipal authority established under the Pennsylvania Municipality Authorities Act of 1945. Seller operates and maintains a water supply system (hereinafter called the "Water System") a significant portion of which is located adjacent to Harrisburg International Airport and north of Route 230 and a small portion which is located immediately South thereof. Said small portion consists of a certain Pump Station No. 302 and discharge lines connected thereto. The Water System as defined in this Agreement is distinguishable from and shall not be construed by this Agreement to be part of the water system which is owned and operated by the Seller to serve the Harrisburg International Airport Property. A drawing depicting the Water System is attached hereto, made a part hereof and identified as Exhibit A. The Water System serves certain territory, located in the State of Pennsylvania and more particularly in Lower Swatara Township, Dauphin County.

B. Purchaser is a corporation organized and existing pursuant to the laws of the State of Pennsylvania and owns water utilities.

C. Seller is desirous of transferring its right and interest in and to the Utility System Assets (as further described in Article 1, Section B) and its obligation to operate and maintain the Utility System Assets (the aforesaid rights, interests and obligations are collectively referred to hereafter as "Sellers Rights and Obligations") to Purchaser and Purchaser is desirous of accepting such a transfer of Seller's Rights and Obligations in and to all of the Utility System Assets, upon the terms and conditions set forth in this Agreement.

NOW, THEREFORE, in consideration of the foregoing recitals, and the mutual covenants and agreements herein contained, the parties, for themselves and their respective successors and assigns, hereby covenant and agree as follows:

Article 1. BUSINESS AND ASSETS TO BE SOLD:

A. **Agreement to Transfer.** Seller agrees to transfer to Purchaser, and Purchaser agrees to accept a transfer for the consideration and upon the terms and conditions as set forth in this Agreement, the Sellers Rights and Obligations (as more particularly described in this Agreement) in and to the Utility System Assets which are to be transferred free and clear of all monetary liens, security interests, judgements and claims.

B. **Utility System Assets to be Conveyed.** The Utility System Assets are more particularly set forth and described as follows:

1. **Facilities.** All of Seller's Rights and Obligations in and to the items described in Schedule 1, List of Utility System Assets, annexed hereto and made a part hereof, including but not limited to two wells (referred to respectively as Well 16, and Well 17), two booster pumping stations, a one-million gallon water tank, transmission mains, distribution mains, supply pipes, valves, meters, meter boxes, hydrants, service connections and all other facilities in service of every kind and description, excluding customer service lines which are owned by the customers and which may or may not be separately metered, in use in connection with the Water System. Seller and Purchaser shall each pay one-half (1/2) of any costs attributable to plugging and sealing Well 17 and Well 16, if not already properly plugged and sealed. SARAA will retain its rights and interests in and to and responsibility for maintenance, repair, replacement and power costs associated with the following components in the main booster station: the motor starter for wells number 1 through 5, the entire B-1 panel, the McCrometer flow meter with its appurtenant transmitter and power supply. SARAA will also retain its rights and interests in and to and responsibility for maintenance, repair, replacement and power costs associated with the following components in the auxiliary pumping station: the smart wire telemetering system and the McCrometer flow meter with its appurtenant transmitter and power supply. Within three months of the date of closing, Seller and Purchaser shall cause the power supply for their respective components of the main booster station and the auxiliary pumping station to be separately metered and to equally share the costs of accomplishing separate metering of the power supply.

2. **Seller's Easements and Access Interests.** Any and all of Seller's rights and interests in and to any easements, rights of way, access licenses, and similar interests.

Seller's rights and interests shall be transferred to Purchaser by a quitclaim deed. The quitclaim deed shall specifically state that the Seller is not warranting any easements, rights of way, or access licenses relating to the Utility System Assets, except such rights of access for maintaining the Utility System Assets as may be specifically recited in documents to be referenced in the quitclaim deed.

3. **Licenses, Permits and Other Rights.** All of Seller's licenses, permits and authorizations, including all permits from the Pennsylvania Department of Environmental Protection (hereinafter the "DEP"), Pennsylvania Public Utility Commission (hereinafter the "PUC"), State and County Health Departments, the municipality, the municipal consent to a territorial franchise, and any and all rights of the Seller to the Utility System Assets subject to the rights of any licensor, lessor, person or entity to approve such transfer.

4. **Customer Records.** All past and current customer records, prints, plans, engineering reports, surveys, specifications, shop drawings, equipment manuals, and other information reasonably requested by the Purchaser which are in possession of the Seller or its agents on the Closing Date pertaining to the operation of the Utility System Assets. A list of current customers is annexed hereto as Schedule 2, List of Current Customers.

Article 2. SOURCE OF WATER:

Upon the closing on the transactions contemplated by this Agreement, Purchaser shall purchase treated water from Seller sufficient to meet the water supply demands of the three

customers connected to the Water System (Pennsylvania State University, First Industrial Realty Trust and The Middletown Home), of approximately 100,000 gallons per day. Purchaser will then interconnect its existing water supply system with the Utility System Assets and, within six months after the transfer of title to the Utility System Assets, Purchaser agrees to purchase from Seller, on average, on a monthly basis, a minimum of 250,000 gallons per day, with the maximum being 1.0 million gallons per day (MGD), based upon monthly meter readings. However, UWPA may request an increase in the quantity of water that it is entitled to purchase from SARAA, and such increase will be granted, provided that SARAA has a surplus of water to sell and that, in the reasonable determination of SARAA, in its sole discretion, selling such surplus water will not jeopardize SARAA's ability to supply water to the then current and to future customers of SARAA, and will not conflict with the obligations of SARAA under any agreements with DEP or any other governmental agencies. If UWPA intends to purchase additional water on a temporary basis, then UWPA shall give SARAA not less than one business day written notice. For a permanent increase in the amount of water that UWPA is entitled to purchase from SARAA, UWPA shall give the SARAA a written notice six months prior to the date that the increase in the quantity of water to be purchased is to go into effect. Purchaser may cease all purchases of water from Seller upon twelve (12) months' written notice to Seller.

The rate to be charged for water by Seller shall be \$0.85 per 1,000 gallons for the first two (2) years after the first sale of water commences as stated at the beginning of this Article 2. The rate may be adjusted annually, after the two year period, by Seller upon twelve (12) months written notice of such increase to Purchaser. The maximum annual percentage increase in the rate charged by Seller shall be equal to the increase in the United States, Bureau

of Labor Statistics Consumer Price Index for All items - All Urban Wage Earners and Clerical Workers for the Philadelphia Area (base year 1982-1984 = 100)(CPI-U) for the calendar year immediately prior to the date of notice of the rate adjustment. However, at three year intervals beginning five years after the beginning of the initial period, the cumulative CPI-U percentage increase for the prior three years shall be compared to the cumulative percentage increase for combined power and chemical costs per million gallons required to operate the Water System (or water system of which the Water System is part if the cost of the operation of the Water System is not separately maintained) over the same three year period. If the cumulative percentage increase for combined power and chemical costs per million gallons is greater than the cumulative CPI-U percentage increase, then the base rate shall be prospectively adjusted by the percent by which the cumulative power and chemical cost per million gallons increase exceeds the cumulative CPI-U increase with a maximum rate adjustment of 18%.

Article 3. PURCHASE PRICE AND TERMS OF PAYMENT:

It is agreed that the Seller's Rights and Obligations in the Utility System Assets shall be transferred to the Purchaser for the consideration of One (\$1.00) Dollar (the "Purchase Price"), payable at closing.

Article 4. CLOSING:

The closing shall take place within thirty-five (35) days of all conditions having been met and of receipt by the parties of all of the approvals necessary pursuant to this Agreement, unless the parties mutually agree in writing to alter such period.

Article 5. OUTSTANDING CLAIMS:

Seller hereby attaches, as Schedule 3, Outstanding Claims, Debts and Amounts Due Creditors, a list of all known outstanding claims, debts, and amounts due creditors relating to the Utility System Assets, which Seller agrees will not be the responsibility of Purchaser before or after closing. Seller represents that it has no knowledge of any claims against Seller relating to the Assets other than those set forth in such Schedule. It is understood and agreed that Purchaser shall have no responsibility for any claim, debt, or liability incurred by Seller whether or not, identified on Schedule 3. Seller shall be responsible for payment of all charges relating to utility service rendered for any period prior to the Closing Date.

Article 6. PHYSICAL ACCESS:

A. General Access. The Purchaser shall have the right (either by access rights currently held by Seller or by written consent (to be obtained by Seller) of the owners of the properties on which the Utility System Assets are located) to enter upon all properties necessary to access the Utility System Assets, for all purposes including for the purposes set forth in Article 7, below.

B. Access to Facilities. The Seller and Purchaser shall cooperate and coordinate to provide Purchaser with access to locked facilities, if any.

C. Access by Seller After Closing. Subsequent to the transfer of the Utility System Assets to Purchaser, Seller's employees and/or contractors shall have access at all

times to the telemetering equipment, well motor controllers, programmable logic controllers and water meters located at the main pumping station, and the auxiliary pumping station.

Seller's employees and/or contractors also shall have access to the vault and the building under the one-million gallon water tank until such time as Purchaser has installed and activated automated system control equipment.

Article 7. INSPECTION AND ACCESS:

A. The Purchaser shall have the right to examine the Utility System Assets after receipt of a fully executed copy of this Agreement for purposes of inspecting and evaluating the Utility System Assets with respect to:

1. Examining the Water System as a whole and all component parts thereof for any major defects;
2. Any significant impact of easements, restrictions or limitations on the operations of the Utility System Assets imposed either by deed or municipal law or regulations;
3. The adequacy of the Utility System Assets to serve all of the present and future customers;

4. Analyzing the water quality to verify that it meets all federal and state requirements;
5. The effect of the local ordinances with regard to any significant limitations on operation of the Seller and other terms and conditions affecting the Seller;
6. Investigation with respect to the amounts and types of insurance required for operation of the Utility System Assets; this Agreement is contingent on Purchaser's determination that it can obtain adequate insurance, including liability, hazard, and for all risks with respect to operation of the Utility System Assets;
7. Investigation with the Township Engineer, the Township Supervisors, Planning Board, Zoning Board, and other governmental officials as Purchaser shall deem necessary, in connection with the operation of Utility System Assets.
8. Where Purchaser's determination of a condition is dependent upon receipt of any Schedule or other necessary information from Seller, the Seller shall submit such Schedule or other information that Purchaser reasonably requests and is the possession of Seller within fifteen (15) days of a written request therefore. Seller shall not be required to incur any out-of-pocket expenses in providing the information.

B. Further Access and Other Material Issues Pending Closing. During a period of one hundred eighty (180) days from the date of this Agreement ("Due Diligence

Period"), the Purchaser may, at its own expense, conduct a due diligence investigation of the Utility System Assets. During the Due Diligence Period, Purchaser, its agents, servants, and employees and authorized representatives, including its engineers, hydrogeologists, accountants and attorneys, shall continue to be permitted full access to the Utility System Assets and to customer files and computer software, if permitted by Licensor. Seller agrees to furnish such persons with any such information as may be reasonably necessary and requested for purposes of this Agreement, and shall make available during ordinary business hours, to enable Purchaser to obtain any additional information concerning the design, construction and operation of the Utility System Assets. If any material issues arise during the Due Diligence Period, in Purchaser's reasonable determination, then Purchaser shall have the right to terminate this Agreement if Purchaser's objections cannot be satisfactorily cured by Seller within a reasonable time.

C. Purchaser's Indemnification of Seller. Purchaser agrees to defend, indemnify and hold Seller harmless from any and all claims, liabilities, and expenses (including reasonable attorney fees and costs) resulting from or arising out of, in any manner, Purchaser, or Purchaser's employees, agents, or contractors, exercising the rights of access and inspection granted to Purchaser under Articles 6 or 7 of this Agreement, or provided elsewhere in this Agreement.

Article 8. SELLER'S REPRESENTATIONS AND WARRANTIES:

Seller represents that as of the date of this Agreement and as of closing:

A. **Standing.** The Seller has full power and authority to own its property and assets and conduct its business as is now being conducted and as has been conducted in the past. The Seller is duly organized, validly existing, and in good standing under the laws of the Commonwealth of Pennsylvania.

B. **Full Authority.** Seller has the full right, power, legal capacity, and authority to enter into this Agreement and the full right, power, legal capacity, and authority to transfer to Purchaser the Rights and Obligations of Seller in and to the Utility System Assets. No approval of any federal, state, or local authority or agency is required for the execution, delivery, and consummation of this Agreement by Seller, except as provided in Article 9 or otherwise provided in this Agreement. No consent or authorization of any other person or agency is necessary to perform the Agreement by Seller, except as provided otherwise herein.

C. **Litigation and Proceeding.** There is no suit, proceeding, or investigation pending or to the actual knowledge, without further investigation or obligation to do so, of Seller threatened against the Seller which would affect the validity, propriety, or performance by Seller of this Agreement, except as provided in Schedule 4, Litigation and Proceedings.

D. **Restrictive Documents and Covenants.** Except as set forth in Schedule 5, **Restrictive Documents**, attached hereto, to the best of Seller's knowledge, and after reasonable inquiry, the Seller is not subject to, or a party to, any charter, by-law, mortgage, lien, lease, license, permit, agreement, contract, instrument, law, rule, ordinance, regulation, order, judgment or decree, or any other restriction of any kind or character which would prevent consummation of the transactions of this Agreement.

E. **Full Disclosure.** No representation or warranty by the Seller in this Agreement, and to the actual knowledge, without further investigation or obligation to do so of Seller no Schedule, statement, or certificate furnished by or on behalf of Seller pursuant to this Agreement, or any documents or certificates delivered to Buyer pursuant to this Agreement, or in connection with the transactions contemplated herein, contain or shall contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements contained therein not misleading.

F. **Approvals and Permits.** Seller represents that it will cooperate with Purchaser in obtaining such approvals and permits as Purchaser shall need to acquire and operate the Assets, provided that Seller shall not be required to bear any out-of-pocket expenses in connection with such assistance.

G. **Meter Readings.** On the closing date, representatives of Seller and Buyer shall jointly read all customer meters. Based upon these meter readings, the Seller shall render its final bills to the customers and shall be entitled to receive payment of said final bills.

H. Building Codes. Seller represents that to its actual knowledge, without further investigation or obligation to do so that it has not received notice of any violations of any local building or fire codes or any other municipal ordinances affecting the use, processing, storage and distribution of water to the public, or the collection, treatment, and disposal of wastewater. Seller further represents that to its actual knowledge, without further investigation or obligation to do so that it has not received notice of any zoning violations, and has not received notice that the use of the Utility System Assets violates any ordinances, rules, and regulations of any governmental agency.

I. Water Quality. Seller warrants that all water furnished to Purchaser as treated potable water shall at all times meet or exceed all water quality requirements and regulations of the Federal Safe Drinking Water Act and the Pennsylvania Safe Drinking Water Act, as well as any and all water quality regulations established by federal, state or local governmental agencies.

ARTICLE 9. AS-IS SALE: DISCLAIMERS:

EXCEPT AS EXPRESSLY SET FORTH IN THIS AGREEMENT, IT IS UNDERSTOOD AND AGREED THAT SELLER IS NOT MAKING AND HAS NOT AT ANY TIME MADE ANY WARRANTIES OR REPRESENTATIONS OF ANY KIND OR CHARACTER, EXPRESS OR IMPLIED, WITH RESPECT TO THE UTILITY SYSTEM ASSETS, INCLUDING, BUT NOT LIMITED TO, ANY WARRANTIES OR REPRESENTATIONS AS TO HABITABILITY, MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.

PURCHASER ACKNOWLEDGES AND AGREES THAT UPON CLOSING SELLER SHALL SELL AND CONVEY TO PURCHASER AND PURCHASER SHALL ACCEPT THE UTILITY SYSTEM ASSETS "AS IS, WHERE IS, WITH ALL FAULTS", EXCEPT TO THE EXTENT EXPRESSLY PROVIDED OTHERWISE IN THIS AGREEMENT. PURCHASER HAS NOT RELIED AND WILL NOT RELY ON, AND SELLER IS NOT LIABLE FOR OR BOUND BY, ANY EXPRESS OR IMPLIED WARRANTIES, GUARANTIES, STATEMENTS, REPRESENTATIONS OR INFORMATION PERTAINING TO THE ASSETS OR RELATING THERETO TO WHOMEVER MADE OR GIVEN, DIRECTLY OR INDIRECTLY, ORALLY OR IN WRITING, UNLESS SPECIFICALLY SET FORTH IN THIS AGREEMENT. PURCHASER ALSO ACKNOWLEDGES THAT THE PURCHASE PRICE REFLECTS AND TAKES INTO ACCOUNT THAT THE PROPERTY IS BEING SOLD "AS-IS".

PURCHASER SHALL, PRIOR TO THE CLOSING DATE, CONDUCT SUCH INVESTIGATIONS OF THE UTILITY SYSTEM ASSETS, INCLUDING BUT NOT LIMITED TO, THE PHYSICAL AND ENVIRONMENTAL CONDITIONS THEREOF, AS PURCHASER MAY DEEM NECESSARY OR DESIRABLE TO SATISFY ITSELF AS TO THE CONDITION OF THE PROPERTY AND THE EXISTENCE OR NONEXISTENCE OR CURATIVE ACTION TO BE TAKEN WITH RESPECT TO ANY HAZARDOUS OR TOXIC SUBSTANCES, AND WILL RELY SOLELY UPON SAME AND NOT UPON ANY INFORMATION PROVIDED BY OR ON BEHALF OF SELLER OR ITS AGENTS OR EMPLOYEES WITH RESPECT THERETO, OTHER THAN SUCH REPRESENTATIONS, WARRANTIES AND COVENANTS OF SELLER AS ARE

EXPRESSLY SET FORTH IN THIS AGREEMENT. EXCEPT TO THE EXTENT EXPRESSLY PROVIDED OTHERWISE IN THIS AGREEMENT, UPON CLOSING, PURCHASER SHALL ASSUME THE RISK THAT ADVERSE MATTERS, INCLUDING BUT NOT LIMITED TO, DEFECTS AND ADVERSE PHYSICAL AND ENVIRONMENTAL CONDITIONS, MAY NOT HAVE BEEN REVEALED BY PURCHASER'S INVESTIGATIONS, AND PURCHASER, UPON CLOSING, SHALL BE DEEMED TO HAVE WAIVED, RELINQUISHED AND RELEASED SELLER (AND SELLER'S OFFICERS, DIRECTORS, EMPLOYEES AND AGENTS) FROM AND AGAINST ANY AND ALL CLAIMS, DEMANDS, CAUSES OF ACTIONS (INCLUDING CAUSES OF ACTION IN TORT), LOSSES, DAMAGES, LIABILITIES, COSTS AND EXPENSES (INCLUDING REASONABLE ATTORNEYS' FEES) OF ANY AND EVERY KIND OR CHARACTER, KNOWN OR UNKNOWN, WHICH PURCHASER MIGHT HAVE ASSERTED OR ALLEGED AGAINST SELLER (AND SELLER'S OFFICERS, DIRECTORS, EMPLOYEES AND AGENTS) AT ANY TIME BY REASON OF OR ARISING OUT OF ANY LATENT OR PATENT DEFECTS OR PHYSICAL CONDITIONS, VIOLATIONS OF ANY APPLICABLE LAWS AND ANY AND ALL OTHER ACTS, OMISSIONS, EVENTS, CIRCUMSTANCES OR MATTERS REGARDING THE ASSETS.

Article 10. CONDITIONS TO PURCHASER'S AND SELLER'S OBLIGATIONS:

The transfer of the Seller's Rights and Obligations in and to the Utility System Assets to Purchaser on the closing date is conditioned upon satisfaction, on or prior to the closing date, of the following conditions:

A. Good Standing and Other Certificates. The Seller has delivered to Purchaser a Certificate of Good Standing.

B. No Material Adverse Change at Closing. Prior to the closing date, there shall be no material adverse change in the Utility System Assets, whether as a result of any legislative or regulatory change, revocation of any license or rights to do business, fire, explosion, accident, casualty, labor trouble, flood, drought, riot, storm, condemnation or act of God or other public force or otherwise.

C. Truth of Representation and Warranties. The representations and warranties of the Seller contained in this Agreement or in Schedules attached hereto shall be materially true and correct on and as of the closing date, with the same effect as though such representations and warranties had been made on and as of such date.

D. Performance of Agreements. All of the agreements of the Seller to be performed on or before the closing date pursuant to the terms hereof shall have been duly performed.

E. No Litigation Threatened. Except as set forth on Schedule 4, no action or proceeding shall have been instituted or, to the best knowledge, information and belief of the Seller, without investigation or obligation to do so, threatened before a court or other governmental body, or by any public authority to restrain or prohibit any of the transactions contemplated hereby.

F. **Seller's Approval.** The approval of this Agreement by the Seller's Board of Directors shall have been obtained. Seller shall deliver to Purchaser a certificate dated the date of closing to the effect that it is compliant with Paragraphs B,C,D,E, and F of this Article 10.

G. **Proceeding.** All proceedings to be taken in connection with the transactions contemplated by this Agreement and all documents incident thereto shall be satisfactory in form and substance to the Purchaser and its counsel, and the Purchaser shall have received copies of all such documents and other evidences as it or its counsel may reasonably request in order to establish the consummation of such transactions and the taking of all proceedings in connection therewith.

H. **Purchaser's Authority.** Purchaser agrees to deliver at closing to Seller a resolution or unanimous written consent of its Board of Directors approving the purchase of the assets, and authorizing the officers of said corporation to execute all documents necessary and proper to consummate said sale. Purchaser represents that the execution of the within Agreement is a valid and binding act of said corporation.

I. **Title and UCC Search.** This Agreement is contingent upon Purchaser obtaining a satisfactory and clear Title and UCC search. In the event that the search indicates liens, encumbrances or other defects in or against the Utility System Assets, Seller shall use reasonable efforts to cure and clear same within thirty (30) days from the date it receives notice of the existence of said liens and encumbrances. If Seller is unable to cure such liens,

encumbrances and other defects Purchaser may either terminate this Agreement or proceed to Closing within fifteen (15) days following the expiration of the thirty (30) day period.

J. Special Conditions. This Agreement is further subject to the following Special Conditions:

1. **Approval - PUC.** The parties understand that this Agreement is contingent on receipt of certain approvals by the PUC. Accordingly, this Agreement is contingent upon approval by the PUC of (1) the transfer of the Utility System Assets to the Purchaser, (2) an extension of Purchaser's franchise area to include the area encompassing the Water System and (3) a determination by the PUC as to issues pertaining to rates, rate base, acquisition costs and related issues, all as are reasonably satisfactory to the Purchaser and consistent with the Purchaser's application to the PUC. It is understood and agreed that the rates to be charged by UWPA for water service shall be UWPA's statewide, uniform tariff rates, as approved by the PUC. Any necessary application to the PUC shall be submitted by Purchaser, at its sole expense, but with the full cooperation of the Seller, as soon as practicable after the full execution of this Agreement.

In the event that the PUC denies approval to Purchaser for the transfer of the Utility System Assets, or in the event that the PUC makes a determination as to rates, rate base, acquisition costs and related issues which determination is not satisfactory to Purchaser, or in the event that the Purchaser and the PUC can not otherwise agree as to rates, rate base, acquisition costs and related issues, this Agreement shall be null and void, and except as outlined herein, the parties shall have no further liability to each other.

2. **Approval - DEP.** This Agreement is contingent upon receipt of required approvals from the DEP relating to the operation of the Water System and authorizing Purchaser to purchase water from Seller, as stated in Article 2 above. Purchaser shall make any necessary applications on a best efforts basis, and at its expense, with the reasonable cooperation of Seller. In the event that the DEP fails to issue the required approvals or issues the approvals upon terms that are not reasonably satisfactory to Purchaser, or does not approve the transfer of Seller's permits to Purchaser, this Agreement shall be null and void, and as except as outlined herein, the parties shall have no further liability to each other.

3. **Approval - Other Agencies.** This Agreement is also contingent upon receipt of any other necessary approvals from agencies having jurisdiction.

4. **Permits.** A determination by the Purchaser that the Seller has obtained all necessary permits from state and local agencies, except as shall be set forth on Schedule 6, Exceptions to Required Approvals, and that all necessary permits are transferable to Purchaser. Seller shall provide Purchaser, within twenty (20) days of the signing of this contract, with copies of current active permits, applications or other documents required for the operation of the Water System, together with effective dates and expiration dates (if any) demonstrating approval of the facilities of the Water System by all applicable governmental authorities, including, but not limited to: (i) the DEP (ii) PUC and (iii) Dauphin County.

5. **Receipt of Utility System Assets.** Receipt of the Utility System Assets free of liens and encumbrances, mortgages, pledges, security interests, or charges whatsoever,

which affect the ability of the Purchaser to operate the Water System, except as set forth in Schedule 7, Liens, Security Interests and Encumbrances attached hereto and made a part hereof.

6. Quitclaim Deeds from Pennsylvania State University, First Industrial Realty Trust and The Middletown Home

The receipt by Purchaser of a quitclaim deed from the Pennsylvania State University, First Industrial Realty Trust and the Middletown Home (or their successors in interest), as fee title owners of the property on which a portion of the Utility System Assets are located, conveying to Purchaser all of the rights, title and interests of Pennsylvania State University, First Industrial Realty Trust and the Middletown Home, (if applicable) respectively, in and to the Utility System Assets and granting to Purchaser rights of easement and access, as the Purchaser may reasonably determine are necessary for the ownership, use and operation of the Utility System Assets by the Purchaser. Seller and Purchaser agree to cooperate in obtaining the aforesaid quitclaim deeds.

Article 11. REPRESENTATIONS AND WARRANTIES OF PURCHASER:

Purchaser represents to Seller that:

A. No Conflict. Neither the execution nor the delivery of this Agreement nor its consummation will conflict with or violate the terms and conditions of any contract or agreement or court order to which Purchaser is a party.

B. **Financial Ability.** Purchaser has full financial ability to consummate this transaction.

C. **Corporate Authority.** Purchaser is a duly organized corporation registered to do business under the laws of the Commonwealth of Pennsylvania and will continue to be so until the closing.

Article 12. PURCHASER'S RIGHT OF ASSIGNMENT:

The Purchaser shall have the right to assign this Agreement to an affiliated company. Any such assignment shall in no way modify or alter the obligations of the Seller as set forth herein.

Article 13. CONDUCT OF BUSINESS PENDING CLOSING:

The Seller and the Purchaser covenant that pending the closing:

A. **No Contract or Commitment.** No contract or commitment regarding the Utility System Assets will be entered into by or on behalf of Seller extending beyond the closing date without the prior written approval of Purchaser:

B. **Copies of Correspondence.** Seller shall forward to Purchaser copies of all correspondence and communications from the DEP and any other governmental agency involving the Seller relating to the transaction contemplated hereby, or otherwise of material importance.

C. **Operation of Business.** During the period from the date of this Agreement to the closing date Seller shall operate the Water System in the ordinary course of business consistent with past practice.

Article 14. BROKER:

Seller and Purchaser represent that they have dealt with no broker in connection with this transaction. In the event any broker claims to have dealt with either party in connection with this transaction, or to have been the inducing cause of this transaction or the efficient or procuring cause of same, either party shall indemnify and hold the other party harmless of and from any commissions, compensation, liabilities, or expenses claimed by such broker with whom such indemnifying party shall have dealt.

Article 15. SELLER'S INDEMNIFICATION:

A. **Seller's Indemnification: Prior Claims, Debts, and Liabilities.** Seller agrees to defend, indemnify and hold Purchaser harmless from all claims, debts, and liabilities (including, without limitation, reasonable counsel fees and expenses (i) for damage, to property of third parties or to persons arising from the operation of the Utility System Assets by the Seller during the period from January 2, 1998, to the closing date, and (ii) directly arising out of the handling, storage, or disposal of any hazardous substance, hazardous waste, oil, petroleum product, toxic chemical, pollutant or contaminant as defined in or pursuant to the Resource Conservation and Recovery Act (42 U.S.C. §§ 6901, et seq.), as amended ("RCRA"), the Comprehensive Environmental Response, Compensation, and Liability Act (42

U.S.C. §§ 9601, et seq.), as amended ("CERCLA"), or any other federal, state, or local laws, ordinances, rules, or regulations concerning pollution or protection of the environment. Seller will wholly and full indemnify Purchaser against any and all claims made by creditors of the Seller which exist or which have accrued as of the closing date or are attributable to Seller's activities prior to the closing date. In the defense of any claim, Seller retains the rights, at its sole cost and expense and where reasonable, to dispute, litigate or arbitrate the claim and to appeal any adverse decision resulting therefrom.

B. Seller's Indemnification: Agreement Representations or Warranties.

The Seller agrees to indemnify and hold the Purchaser and its officers, directors and agents harmless from damages, losses or expenses (including, without limitation, reasonable counsel fees and expenses), suffered or paid, directly or indirectly, as a result of or arising out of the failure of any representation or warranty made by the Seller in this Agreement or in any Schedule attached hereto to be materially true and correct in all respects as of the date of this Agreement and as of the closing date.

Article 16. PURCHASER'S INDEMNIFICATION:

A. Purchaser's Indemnification: Subsequent Claims, Debts and Liabilities.

Purchaser agrees to defend, indemnify and hold Seller harmless from all such claims, debts, and liabilities (including, without limitation, reasonable counsel fees and expenses) arising from the operation of the Utility System Assets subsequent to the closing date. In the defense of any claim, Purchaser retains the right, at its sole cost and expense and where

reasonable, to dispute, litigate or arbitrate the claim and to appeal any adverse decision resulting therefrom.

B. Purchaser's Indemnification: Agreement Representations or Warranties.

The Purchaser agrees to indemnify and hold the Seller harmless from damages, losses or expenses (including, without limitation, reasonable counsel fees and expenses), in the aggregate, suffered or paid, directly or indirectly, as a result of or arising out of the failure of any representation or warranty made by the Purchaser in this Agreement to be materially true and correct in all respects as of the date of this Agreement and as of the closing date.

Article 17. TERMINATION:

Except as otherwise set forth herein, and in addition to any other provisions which allow for termination, if, with the full cooperation and diligent efforts of both parties, all conditions of this Agreement including, but not limited to, the conditions set forth in Article 10 can not be met within two hundred eighty 280 days of execution, this Agreement may be terminated by either party upon written notice to the other party and the parties shall be relieved of all rights and responsibilities hereunder, except as specifically specified herein.

Article 18. EASEMENTS, FEE INTERESTS, AND LEASEHOLD INTERESTS:

A. Title Review. Purchaser shall have a period of one hundred eighty (180) days from the date of this Agreement to obtain a title report and take such other actions as the Purchaser may reasonably determine are necessary for the Purchaser to determine matters of

record or visible on the properties on which the Utility System Assets are located, relating to the ownership, use and operations of the Utility System Assets. After receipt of the results of the title search, Purchaser shall make a determination as to whether such easements, leasehold and fee interest are sufficient for access and operation of the Utility System Assets, and as to whether title to the relevant easements and interests shall be marketable and insurable without material exception by a title company licensed to do business in the State of Pennsylvania. Purchaser shall advise Seller within the aforesaid one hundred eighty (180) day period as to whether Purchaser has determined that matters of title are satisfactory to Purchaser. If Purchaser notifies Seller in writing within the said one hundred eighty (180) day period, that the conditions of title are not satisfactory to Purchaser, then this Agreement shall terminate and neither party shall have further liability to the other. If Purchaser fails to notify Seller within the one hundred eighty (180) day period, that Purchaser objects to the condition of title, then Purchaser shall be deemed to have waived its right to object to the condition of title and may not terminate this Agreement on the basis of title conditions, except as to any condition which might arise subsequent to the expiration of the aforesaid one hundred eighty (180) day period.

B. Deeds. Any interests of Seller in the Assets shall be conveyed and transferred to Purchaser by Quitclaim Deed. Seller shall not only convey any interests that it may have to Purchaser, but shall also cause Pennsylvania State University, First Industrial Realty Trust, and The Middletown Home to convey to Purchaser any interests that they may have regarding the Utility System Assets by Quitclaim Deeds. The execution of Quitclaim Deeds shall not be construed in any manner as an admission of any form of ownership or interest of Seller in the Utility System Assets.

to Purchaser:

Gregory P. Wyatt, Vice President
United Water Pennsylvania Inc.
4211 East Park Circle
Harrisburg, PA 17111

or such other address as either party may from time to time furnish to the other in writing for such purposes.

All notices shall be in writing and shall be mailed by certified or registered mail in an envelope, postage prepaid, addressed as above described, return receipt requested. Any notice in writing, regardless of how mailed or wired, shall be deemed valid if received by the party to whom it is sent.

E. Intended Beneficiaries. All the terms, covenants, and conditions herein contained shall be for, and shall inure to, the benefit of and shall bind the respective parties hereto, and their legal representatives, successors, and assigns, respectively.

F. Third Party Beneficiaries. Each party hereto intends that this Agreement shall not benefit or create any right or cause of action in or on behalf of any Person other than the parties hereto and their lawful assigns.

G. Agreement Counterparts. This Agreement may be executed in one or more counterparts, each of which shall be deemed an original but all of which together shall constitute one and the same instrument.

H. **Gender and Number.** In all references herein to any parties, persons, entities, or corporations, the use of any particular gender or the plural or singular number is intended to include the appropriate gender and number as the text of the within instrument may require.

I. **Attachment of Schedules.** If any Schedule is not attached to this Agreement on the date of execution, this Agreement shall be contingent upon said Schedule being attached hereto within twenty (20) days from the date hereof unless a longer period of time is set forth either hereunder, or in a Supplementary Agreement Covering Schedules describing such Schedule and the time for furnishing such Schedule, which Supplementary Agreement shall be executed simultaneously herewith. Any failure of Purchaser to require such Schedules to be furnished in accordance with such time set forth shall not be deemed a waiver of its rights under this Agreement or at law. All Schedules called for in this Agreement shall be prepared and furnished by Seller at its sole cost and expense. Exhibit A shall be prepared by Purchaser, at its own expense, with the cooperation of Seller.

J. **Insurance and Risk of Loss.** Seller agrees to maintain Seller's current fire and other casualty insurance, if any, upon all Assets to be purchased by Buyer, up to and including the date of closing, and shall bear the risk of any loss herein until said date.

K. **Further Agreements.** The parties agree to execute any further agreements, documents, affidavits, or assurances that may be necessary to consummate and give full force and effect to the terms of this Agreement.

Article 19. MISCELLANEOUS:

A. **Headings.** The Agreement heading and all Article, Paragraph, and Schedule headings are for ease of reference and convenience only and do not alter, amend, explain, or otherwise affect the terms and conditions appearing in this Agreement.

B. **Entire Agreement.** This Agreement contains the entire understanding of the parties hereto in respect to the subject matter contained herein. There are no restrictions, warranties, covenants, or undertakings other than those expressly set forth herein. This Agreement supersedes all prior Agreements and understandings between the parties with respect to the subject matter of the transaction contemplated hereby. This Agreement may be amended only by a written instrument being executed by the parties hereto or their respective successors or assigns.

C. **Choice of Law.** This Agreement shall be governed by and construed in accordance with the Laws of the Commonwealth of Pennsylvania.

D. **Notices.** All notices to be given hereunder shall be properly given if they are addressed:

to Seller:

David G. Holdsworth
Executive Director
Susquehanna Area Regional Airport Authority
135 York Drive, Suite 100
Harrisburg International Airport
Middletown, PA 17057

L. Time of Completion. All Parties hereto agree to use their best efforts to fulfill the requirements of this Agreement as soon as practicable.

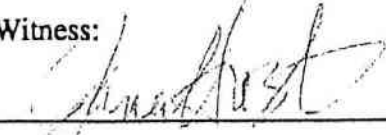
Article 20. SURVIVAL OF COVENANTS AND WARRANTIES AND INDEMNIFICATION:

Seller and Buyer warrant and represent that each and all of the agreements, covenants, warranties, indemnifications, hold harmless provisions and representations contained in this Agreement, or in any Schedule attached hereto, are true and shall be true at the time of closing and shall survive the closing of title, and the purchase and sale contemplated hereby, unless expressly provided otherwise herein, for a period of one (1) year after closing.

Notwithstanding the prior sentence, if within the one (1) year period of time, any notice of a claim for indemnification is given, or a suit or action based upon an agreement, covenant, warranty or representation contained in this Agreement is commenced; the affected party shall not be precluded from pursuing such claim or action, or from recovering from the other party (whether through the courts or otherwise) on the claim or action, by reason of the expiration of the one (1) year period of time.

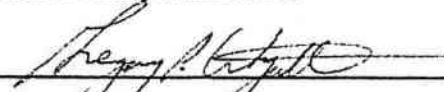
IN WITNESS WHEREOF, the parties hereto have hereunto set their hands and seals
and caused the proper seal to be hereto affixed the day and year first above written.

Witness:



United Water Pennsylvania Inc.

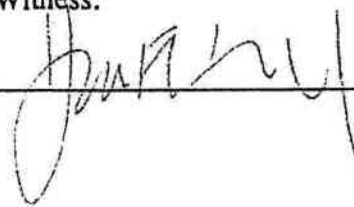
Name:



Title:

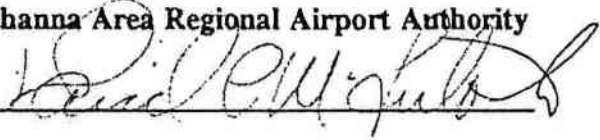
VICE PRESIDENT

Witness:



Susquehanna Area Regional Airport Authority

Name:



Title:

Chairman

List of Exhibits and Schedules

Exhibits:

A Drawing of Water System

Schedules:

- 1 List of Utility System Assets
- 2 List of Current Customers
- 3 Outstanding Claims, Debts and Amounts Due Creditors
- 4 Litigation and Proceedings
- 5 Restrictive Documents
- 6 Exceptions to Required Approvals
- 7 Liens, Security Interests and Encumbrances

EXHIBIT A
DRAWING OF WATER SYSTEM

SCHEDULE 1
LIST OF UTILITY SYSTEM ASSETS

Well No. 16

Well No. 17

Two Booster Pumping Stations

A One-million Gallon Water Tank
(and associated building housing telemetry)

Transmission Mains

Distribution Mains

Supply Pipes

Valves

Meters

Meter Boxes

Hydrants

Service Connections (only)

SCHEDULE 2

LIST OF CURRENT CUSTOMERS

Pennsylvania State University
Capitol Campus
Office of Physical Plant
777 West Harrisburg Pike
Middletown, PA 17057-4898

w/copy to:

Pennsylvania State University
Capitol Campus
Housing & Food Services
777 West Harrisburg Pike
Middletown, PA 17057-4898

First Industrial Realty Trust
6400 Flank Drive
Suite 600
Harrisburg, PA 17112

Odd Fellows Home of PA/Middletown Home
999 West Harrisburg Pike
Middletown, PA 17057

SCHEDULE 3
OUTSTANDING CLAIMS, DEBTS AND AMOUNTS DUE CREDITORS

None

SCHEDULE 4
LITIGATION AND PROCEEDINGS

None

SCHEDULE 5
RESTRICTIVE DOCUMENTS

None, except any restrictive covenants or other encumbrances of record or previously disclosed to Purchaser.

SCHEDULE 6
EXCEPTIONS TO REQUIRED APPROVALS

None

SCHEDULE 7

LIENS, SECURITY INTERESTS AND ENCUMBRANCES

Mortgages: None

Security Interest: None

Pledges: None

Charges: None

Other Encumbrances: Those of record or previously disclosed
to Purchaser.



**2017
Annual
Drinking Water Quality Report
For the
WATER SYSTEM
AT HARRISBURG INTERNATIONAL AIRPORT**

On behalf of the Susquehanna Area Regional Airport Authority, we are pleased to present this year's Consumer Confidence Report. This report is designed to inform you about the quality of the water and services the airport provides. Our constant goal is to provide you with a dependable supply of drinking water. We are committed to ensuring the quality of your water.

We are also pleased to report that our drinking water meets or exceeds all federal and state requirements.

If you have any questions about this report or your water quality, please contact Scott Snoke, Utility Program Manager at (717) 948-3900 Monday through Friday between the hours of 7:30 AM and 4:00 PM. This report is also available on our website at www.flyhia.com, Airport Authority, Water Report. We want our valued customers to be informed about their water quality. The Public Water Supply ID Number is 7220044 for Harrisburg International Airport.

The Water System at Harrisburg International Airport is routinely monitored for constituents in the drinking water according to Federal and State laws. All drinking water, including bottled drinking water, may reasonably be expected to contain at least small amounts of some constituents. It's important to remember that the presence of these constituents does not necessarily pose a health risk.

The attached pages show the results of our monitoring for the period of January 1 to December 31, 2017.



2017 ANNUAL DRINKING WATER QUALITY REPORT

PWSID #: 7220044

NAME: Harrisburg International Airport

Este informe contiene importante acerca de su agua potable. Haga que alguien lo traduzca para usted, ó hable con alguien que lo entienda. (This report contains important information about your drinking water. Have someone translate it for you, or speak with someone who understands it.)

WATER SYSTEM INFORMATION:

This report shows our water quality and what it means. If you have any questions about this report or concerning your water utility, please contact Scott Snoke at 717-948-3900 x4608. This report is also available on our website at www.flyhia.com. We want our valued customers to be informed about their water quality.

SOURCE(S) OF WATER:

The Airport water source consists of ten groundwater wells. Wells #1, #2, #3, #4 and #5 are located at the East End of the airport. Wells #6, #9, #11, #12 and #13 are located at the central part of the airport.

At one time or another, all of the wells were found to have volatile organic compounds (known as VOCs) in the water. To treat this condition, the Groundwater Remediation Facility was constructed in 1988 and went online in May of 1990. Water from all of the wells online flows through this building. There the water is softened and airstrippled, to remove 99% of VOCs, and is chlorinated to ensure proper disinfection.

MONITORING YOUR WATER:

We routinely monitor for contaminants in your drinking water according to federal and state laws. The following tables show the results of our monitoring for the period of January 1 to December 31, 2017. The State allows us to monitor for some contaminants less than once per year because the concentrations of these contaminants do not change frequently. Lead and copper sampling was conducted during June 2016 at sample location representative of the HIA water distribution system.

During 2014 UCMR3 it was discovered that a drinking water sample collected exceeded the provisional Health Advisory Levels (HAL) of an EPA selected group of Perfluorinated Compounds (PFC), specifically PFOS >0.2 ppb for drinking water samples collected during February and June 2014. Immediate Actions taken during June 2014 included Tier 3 Public Notification & PA DEP/EPA consultation, isolation of Wells 6, 9, & 13, in addition the water storage and distribution systems were flushed to remove and lower PFC concentration below HAL and subsequent confirmatory sampling was performed. The follow-up actions conducted were, a meeting with the PA DEP/EPA and reporting that 'Drinking Water Problem Corrected' occurred during August 2014. Subsequent monthly samples and laboratory analysis have been performed since these initial actions took place. All subsequent sample levels have been below the HAL's. During May 2016 the EPA issued a revised HAL to lower the concentration that was previously issued. The current wells utilized and drinking water are currently below this new revised HAL. (see Sample Results Table)

DEFINITIONS:

Action Level (AL) - The concentration of a contaminant which, if exceeded, triggers treatment or other requirements which a water system must follow.

Maximum Contaminant Level (MCL) - The highest level of a contaminant that is allowed in drinking water. MCLs are set as close to the MCLGs as feasible using the best available treatment technology.

Maximum Contaminant Level Goal (MCLG) - The level of a contaminant in drinking water below which there is no known or expected risk to health. MCLGs allow for a margin of safety.

Maximum Residual Disinfectant Level (MRDL) - The highest level of a disinfectant allowed in drinking water. There is convincing evidence that addition of a disinfectant is necessary for control of microbial contaminants.

Maximum Residual Disinfectant Level Goal (MRDLG) - The level of a drinking water disinfectant below which there is no known or expected risk to health. MRDLGs do not reflect the benefits of the use of disinfectants to control microbial contaminants.

Minimum Residual Disinfectant Level (MinRDL) - The minimum level of residual disinfectant required at the entry point to the distribution system.

Unregulated Contaminant Monitoring Rule 3 (UMCR3) Required monitoring of a select group of unregulated drinking water compounds during 2014.

ppm = parts per million, or milligrams per liter (mg/L)

ppb = parts per billion, or micrograms per liter (µg/L)

DETECTED SAMPLE RESULTS:

Chemical Contaminants								
Contaminant	MCL in CCR Units	MCLG	Level Detected	Range of Detections	Units	Sample Date	Violation Y/N	Sources of Contamination
21 regulated VOC's (EPA Method 502.2)	Various	Various	ND	Various	ppb	Various	N	Various sources including run off, leaching, and factory discharges
SOC's (Synthetic Organic compounds including PCB's, Dioxin, pesticides, herbicides and carbamates),	Various	Various	ND	ND	ppb	4/12/2017	N	Various sources including run off, leaching, and factory discharges
Nitrate	10	10	3.4	3.4	ppm	8/14/2017	N	Runoff from fertilizer use.
Nitrite	10	10	ND	ND	ppm	8/14/2017	N	Runoff from fertilizer use.
Trihalomethanes (Total THM)	80	0	Average result 33.8	24.1 – 43.4	ppb	8/14/2017	N	By-product of drinking water disinfection
HaloAcetic Acids (Total HAA)	60	0	Average result 4.0	3.5 – 4.4	ppb	8/14/2017	N	By-product of drinking water disinfection
Perfluorooctanoic Acid (PFOA) Perfluorooctanesulfonic Acid (PFOS)	Lifetime HAL 0.07 PFOA & PFOS Total	Lifetime HAL 0.07 PFOA & PFOS Total	Average result 0.043	0.027 – 0.057	ppb	01/2017-12/2017	N	Firefighting foam and various other sources

Distribution System Disinfectant Residual							
Contaminant	MCDLG	MRDL	Range of Detections	Units	Sample Date	Violation Y/N	Sources of Contamination
Free Chlorine Residual	4	4	0.17 – 1.11	ppm	Various	N	Water additive used to control microbes.

Microbial					
Contaminants	MCL	MCLG	Highest # or % of Positive Samples	Violation Y/N	Sources of Contamination
Total Coliform Bacteria	For systems that collect <40 samples/month: <ul style="list-style-type: none"> • More than 1 positive monthly sample 	0	0	N	Naturally present in the environment.
Fecal Coliform Bacteria or <i>E. coli</i>	0	0	0	N	Human and animal fecal waste.

HEALTH EFFECTS:

Some people may be more vulnerable to contaminants in drinking water than the general population. Immuno-compromised persons such as persons with cancer undergoing chemotherapy, persons who have undergone organ transplants, people with HIV/AIDS or other immune system disorders, some elderly, and infants can be particularly at risk from infections. These people should seek advice about drinking water from their health care providers. EPA/CDC guidelines on appropriate means to lessen the risk of infection by *Cryptosporidium* and other microbial contaminants are available from the *Safe Drinking Water Hotline* (800-426-4791).

OTHER VIOLATIONS: None

EDUCATIONAL INFORMATION:

The sources of drinking water (both tap water and bottled water) include rivers, lakes, streams, ponds, reservoirs, springs and wells. As water travels over the surface of the land or through the ground, it dissolves naturally-occurring minerals and, in some cases, radioactive material, and can pick up substances resulting from the presence of animals or from human activity. Contaminants that may be present in source water include:

- Microbial contaminants, such as viruses and bacteria, which may come from sewage treatment plants, septic systems, agricultural livestock operations, and wildlife.
- Inorganic contaminants, such as salts and metals, which can be naturally-occurring or result from urban stormwater run-off, industrial or domestic wastewater discharges, oil and gas production, mining, or farming.
- Pesticides and herbicides, which may come from a variety of sources such as agriculture, urban stormwater runoff, and commercial or residential uses.
- Organic chemical contaminants, including synthetic and volatile organic chemicals, which are by-products of industrial processes and petroleum production, and can also come from fueling activities, gas stations, urban stormwater runoff, and septic systems.
- Radioactive contaminants, which can be naturally-occurring or be the result of oil and gas production and mining activities.

In order to ensure that tap water is safe to drink, EPA and DEP prescribes regulations which limit the amount of certain contaminants in water provided by public water systems. FDA and DEP regulations establish limits for contaminants in bottled water which must provide the same protection for public health.

Drinking water, including bottled water, may reasonably be expected to contain at least small amounts of some contaminants. The presence of contaminants does not necessarily indicate that water poses a health risk. More information about contaminants and potential health effects can be obtained by calling the Environmental Protection Agency's *Safe Drinking Water Hotline* (800-426-4791).

Information about Lead

If present, elevated levels of lead can cause serious health problems, especially for pregnant women and young children. Lead in drinking water is primarily from materials and components associated with service lines and home plumbing. Harrisburg International Airport is responsible for providing high quality drinking water, but cannot control the variety of materials used in plumbing components. Ten representative samples were collected during June 2016 for Lead and Copper analysis. Lead and copper sampling will be conducted again during 2019.

To reduce exposure when your water has been sitting for several hours, you can minimize the potential for lead exposure by flushing your tap for 30 seconds to 2 minutes before using water for drinking or cooking. If you are concerned about lead in your water, you may wish to have your water tested. Information on lead in drinking water, testing methods, and steps you can take to minimize exposure is available from the Safe Drinking Water Hotline or at <http://www.epa.gov/safewater/lead>.

Information about PFC's (see EPA link below)

Fact Sheet PFOA and PFOS Drinking Water Health Advisory

https://www.epa.gov/sites/production/files/2016-06/documents/drinkingwaterhealthadvisories_pfoa_pfos_updated_5.31.16.pdf

Leak Survey Proposal

SUEZ Water Pennsylvania

**Water Utilities PROPOSAL for Water Distribution System
Leak Detection Services**

**Steven Metzler
4211 East Park Circle
Harrisburg, PA 17111
ph: 717-901-6326 steven.metzler@suez.com**

June 13, 2018

American Leak Detection

AMERICAN LEAK DETECTION

*Saving water and resources
since 1974.*

Introduction

ALD is an established professional company with over 40 years' experience in the field of leak detection and water conservation.

ALD works with many water companies and has formed trusted working relationships which have led to our growth in this sector. Due to our spread of work across the country we have been able to adopt many different techniques and methods which in turn enable us to implement and adopt best practice across a number of our contracts.

At the start of each contract we will discuss and agree a way of working with our client to manage both the staff and the contract efficiently. The main areas we will focus on are; -

- Ensuring all equipment is in line with new technologies and upgrade if necessary
- Take joint responsibility in management of staff
- Agree jointly, methods of work
- Actively performance manage the staff
- Share all knowledge and ideas with our client

We strongly believe in adding value to all parts of our operations, which in turn enhances the experience to the customer. Our level of client support is not matched by any of our competitors, which results in a high level of customer satisfaction.

References

ALD works with many water companies and has formed trusted working relationships which have led to our growth in this sector. In 2016 we acquired additional capabilities in order to build and fully exploit the municipal line of business through the purchase of NRW Utilities Ltd, a UK based company specializing in leak detection services.

By combining our experience within the group, ALD can utilize the expertise of the UK technicians and work closely together with our US technicians. Together, we can provide highly experienced and knowledgeable staff from many different sectors of the water industry. Staff have worked at all levels and have been involved in all stages of leakage management from planning and conception to the implementation and management. This coupled with an in-depth understanding of leak detection and water management enables ALD to tackle leakage with high levels of efficiency and success.

Previous leak detection surveys that have been carried out in the US include the following;

Municipal	Reference
City of Miramar, Florida	Stephen Glatthorn – sglatthorn@miramarfl.gov
Knox Chapman Utility District	Scott Prater (865) 577-4497
Golden State Water - Rancho Cordova	Larry Dees, 2330 A Street, Santa Maria, CA
Golden State Water – Baypoint	(805) 346-7407 - 2016 and 2017
Golden State Water – Clearlake	

Management To Be Utilized OFFSITE	Experience LOGISTICAL & SUPPORT CONSULTANTS
Steve Gayler (NRW)	30 Years in Water Industry NRW Specialist
Jimmy Carter (American Leak Detection)	30 Years in Water Industry VP of Field Operations
Jeff Deel (American Leak Detection)	15 Years in Water Industry
Personnel To Be Utilized ONSITE	Experience
Mike Haines (American Leak Detection)	Project Supervisor – 17 Years in Water Industry
Andy Whitmyer (ALD) Michael Glinka (ALD) Ryan Yohn (ALD) Steve Schry (ALD)	All technicians are trained in: Survey Correlation Ground Mic Line Locating
Mindy Miller (ALD)	Logistical & GIS Support
* We also have the resources to pull other techs from the franchise system if needed	

ALD has a wide variety and diverse resource pool of expertise within the water industry and its services are 100% focused on providing leak detection services for water companies across the US.

Therefore, it not only understands all the issues involved, it has also already placed considerable resources and training into the development of this service.

ALD will provide as a minimum;

- ✓ Management support
- ✓ High specification of equipment
- ✓ Flexibility
- ✓ Excellent levels of customer care and support

Equipment

American Leak Detection will use the following equipment for survey:

- Correlator
- Survey Tool
- Ground Microphone
- Hydrophones
- Data Loggers
- Valve Box Locator
- Line Locating Equipment

Tentative Schedule

Most of the survey for Phase I will be completed between October 1, 2018 and April 30, 2019. The remainder of Phase I will be completed during the spring/summer of 2019. Phase II will begin October 1, 2019 and be completed by the end of 2019.

Approach

Due to the different types of pipes in the distribution system, American Leak Detection will utilize different equipment and different approaches for each.

Cast Iron/Ductile Iron – We will use survey tool on inline and hydrant valves to listen for leaks. We will then use a correlator to "shoot" a signal between valves. If we pick up any positive leak readings in between valves, we will locate all curb stops in the area and check for leaks. We will use ground microphones, line locating equipment, and sensors to pinpoint the leak and determine if it is on the main, lateral, or customer side. For high traffic/noise areas we will use data loggers. If loggers indicate a leak, then we will have to coordinate with SUEZ and plan possible off-hours work or set up traffic control. American Leak Detection will not be responsible for traffic control.

Asbestos Concrete – We will have to listen on all inline and hydrant valves with survey tool. If any positive leak readings are found, we will set up the hydrophones and correlate between hydrants. All curb stops will need to be located and lids removed so that we can use survey tool on each one. Ground mic will be mostly used to pinpoint leaks on AC pipe due to lack of sound. Data loggers will also be used in high traffic areas.

Plastic – Most of the same techniques that we use for AC pipe are used for plastic. We will listen on all inline and hydrant valves. All curb stop lids will be removed and survey tool used to listen for leaks. Hydrophones and data loggers will be implemented when needed. Most pinpointing will be done with ground microphones.

NOTE: American Leak Detection will require SUEZ Water personnel to assist in locating and uncovering buried curb stops ahead of survey crew.

ArcGIS

American Leak Detection utilizes Trimble Surveying Equipment for GIS mapping. We have contacted our equipment rep and he has assured us that we can upload the SUEZ provided data into Trimble Unity directly without obtaining an ArcGIS online license.

ESTIMATE

Billing Phone: 717-901-6326

Estimate Date: June 13, 2018

Attn: Steven Metzler
4211 East Park Circle, Harrisburg, PA 17111

Billing Address	Job Site Address
As above	City of Harrisburg, Bloomsburg, Dallas, Shavertown & Mahoning Township

Item	Description of work to be performed	TOTAL
Estimate	<p>Estimate to perform Leak Detection Survey on City of Harrisburg, Bloomsburg, Dallas, Shavertown and Mahoning Township.</p> <p>We propose to undertake a full Leak Detection survey, utilizing a wide range of leak detection tools as stated previously in equipment outline.</p> <p>All leaks located will be accurately positioned using GIS technology as per the RFQ. We will also provide photographs of leak positions.</p> <p>The survey will be done at times to suit the client's requirements. This will include testing at all available access points such as main line gate valves, fire hydrants, meter/curb valves etc.</p>	
	<u>Phase I</u>	
	<p>Harrisburg</p> <p align="right">Lump Sum Costs \$331,200.00 Labor 207 days*</p>	
	<u>Phase II</u>	
	<p>Bloomsburg</p> <p align="right">Lump Sum Costs \$54,400.00 Labor 34 days*</p>	
	<p>Dallas</p> <p align="right">Lump Sum Costs \$25,600.00 Labor 16 days*</p>	
	<p>Shavertown</p> <p align="right">Lump Sum Costs \$9,600.00 Labor 6 days*</p>	
	<p>Mahoning Township</p> <p align="right">Lump Sum Costs \$16,000.00 Labor 10 days*</p>	
		* (2-3 Techs) @ \$1600.00 per day.

Please make checks payable to: American Leak Detection, PO Box 721, Lititz, PA 17543 CREDIT CARD PAYMENTS (Please call into the office)	TOTAL ESTIMATED AMOUNT
	\$436,800.00**
**Total projected for a minimum of 2 techs to be onsite in addition to the Supervisor being onsite on a regular basis. Will also add more techs if available, for possible earlier completion date.	

Estimate Summary

Phase I

Harrisburg – 519 total miles

175 miles of metal pipe
5 miles per day (2 techs) = 35 days @ \$1600/day

344 miles of non-metallic pipe
2 miles per day (2 techs) = 172 days @ \$1600/day

.....Total: 207 days @ \$1600/day = \$331,200.00

Phase II

Bloomsburg – 81.5 total miles

27 miles of metal pipe
5 miles per day (2 techs) = 6 days @ \$1600/day

54 miles of non-metallic pipe
2 miles per day (2 techs) = 28 days @ \$1600/day

.....Total: 34 days @ \$1600/day = \$54,400.00

Dallas – 37 total miles

12 miles of metal pipe
5 miles per day (2 techs) = 3 days @ \$1600/day

25 miles of non-metallic pipe
2 miles per day (2 techs) = 13 days @ \$1600/day

.....Total: 16 days @ \$1600/day = \$25,600.00

Shavertown – 15 total miles

5 miles of metal pipe
5 miles per day (2 techs) = 1 day @ \$1600/day

10 miles of non-metallic pipe
2 miles per day (2 techs) = 5 days @ \$1600/day

.....Total: 6 days @ \$1600/day = \$9,600.00

Mahoning Township – 22.5 total miles

7.5 miles of metal pipe
5 miles per day (2 techs) = 2 days @ \$1600/day

15 miles of non-metallic pipe
2 miles per day (2 techs) = 8 days @ \$1600/day

.....Total: 10 days @ \$1600/day = \$16,000.00

Michael Haines, President
MLH Leak Services, Inc. dba American Leak Detection

Sequence	Leak_ID	Created	Size	Asset_Type	StreetAddr
001		2017-04-19T10:59:00.718628Z	High	Service line	18244 SW 20 St
002		2017-04-19T11:24:27.616Z	Low	Possible leak on customer s	1909 SW 183rd Terr
003		2017-04-19T11:33:16.027Z	Low	Hydrant	1825 SW 183rd Terr
004		2017-04-19T11:54:22.254554Z	High	By meter	1805 SW 181st Way
005		2017-04-19T12:20:07.903949Z	Surfacing	Meter	18204 SW 20th St
006		2017-04-19T16:52:04.847667Z	High	Meter	2331 SW 180th Ave
					2331 SW 180th Ave
008		2017-04-19T17:09:24.926196Z	High	Service line	18048 SW 24th St
009		2017-04-20T11:53:33.341358Z	Medium	Service Line	2643 SW 181 Terrace
010		2017-04-20T13:19:29.2293Z	Medium	Service Line	2621 sw 180 ave
011		2017-04-20T13:57:40.176124Z	Low	Meter	2506 SW 183 Ave
012		2017-04-20T14:28:29.436485Z	Low	Service Line	18276 sw 26 ct
013		2017-04-20T14:59:56.382358Z	Low	Meter	18206 SW 26 Ct
014		2017-04-20T15:38:14.643738Z	Medium	Service Line	2743 sw 179/tr
015		2017-04-20T15:54:34.687945Z	Medium	Service Line	2734 sw 179 terr
016		2017-04-20T16:15:18.470466Z	Low	Service Line	Across the street opposite 17976 sw 29 street re
017		2017-04-20T17:12:52.996273Z	Medium	Service Line	18231 sw 27 street
018		2017-04-20T17:40:00.591713Z	High	Service Line	Opposite 2754 sw 183 avenue
019		2017-04-24T14:26:46.484058Z	Medium	Service Line	18162 sw27 street
020		2017-04-24T15:21:53.112298Z	Low	Service Line	2711 SW 179th Ave.
021		2017-04-24T16:17:53.258885Z	Medium	Service Line	3007 SW 179th Ave.
022		2017-04-24T16:24:05.531703Z	Medium	Service Line	3006 SW 179th Ave.
023		2017-04-24T17:09:30.139224Z	Low	Service Line	17958 sw 30th court
024		2017-04-24T17:22:47.528715Z	Low	Service Line	17978 sw 30th court
025		2017-04-24T17:35:35.043976Z	Medium	Service Line	18078 sw 30th court
026		2017-04-24T17:44:37.008464Z	Low	Service Line	17952 sw 29th lane
027		2017-04-25T10:55:24.673579Z	Low	Service Line	17912 SW 179th Ave.
028		2017-04-25T11:19:08.268132Z	Low	Service Line	2957 sw 179th avenue
029		2017-04-25T11:38:30.269428Z	Low	Service Line	17631 SW 31st Ct
030		2017-04-25T11:48:01.659114Z	Low	Service Line	3118 SW 176th way
031		2017-04-25T12:06:31.097987Z	Low	Service Line	17673 SW 32nd St
032		2017-04-25T14:48:30.614038Z	Medium	Service Line	3128 SW 177th Ave.

ATTENTION PROPERTY OWNER

Address: _____

American Leak Detection is performing a water survey in this area. A potential leak has been detected on your service line. Please contact SUEZ Water upon receipt of this notice.

SUEZ
4211 East Park Circle
Harrisburg, PA 17111
717-564-3662



ATTENTION PROPERTY OWNER

Address: _____

American Leak Detection is performing a water survey in this area. A potential leak has been detected on your service line. Please contact SUEZ Water upon receipt of this notice.

SUEZ
4211 East Park Circle
Harrisburg, PA 17111
717-564-3662



DAVID B. BONKOVICH
313 S. Crescent Avenue
Hamburg, PA 19526
TheDTector@aol.com
(610) 780-6666

Water Leak Detection • Leakage Control Programs
Leak Pinpointing



June 12, 2018

Mr. Steve Metzler, P.E.
Suez Water
4211 East Park Circle
Harrisburg, PA 17111

Re: Proposed 2018/2019 Water Leak Detection

Dear Mr. Metzler:

Thank you for your inquiry and invitation to provide water leak detection services for Suez Water. As discussed during our meeting on 6/7/2018, Suez is considering leak detection assistance on 675 miles of piping in the Harrisburg, Bloomsburg, Dallas, Shavertown, and Mahoning Township systems. Suez is particularly concerned about the current high unaccounted-for in the Harrisburg system and the inability to lower it.

Your records indicate there are approximately 519 miles of piping in the Harrisburg system. Documentation, as reported, shows that the system is comprised about 33/33/33 of metallic/AC/plastic. Current pumpage at Harrisburg averages ~ 12 MGD with an unaccounted-for of 32%. This proposal lays out the following objectives:

- 1) Breaks down the Harrisburg system into a smaller pilot survey to offer Suez the opportunity to evaluate the effectiveness of the leak survey without committing to the full 675 miles. It is proposed to target ~ 135 miles between I-81 and Route 322 in the D2 South zone for the pilot survey, a sample area large enough to generate quantifiable results.
- 2) Asks Suez to establish a realistic target level to gauge success. Sub-metering indicates that unaccounted-for in D2 South is about 600 gal/minute, or 864,000 gal/day. Some of this is leakage, some is authorized unmetered usage.
- 3) Offers a leak detection approach to specifically address leak detection needs on non-metallic piping.
- 4) Coordinates directly with Suez leak detection personnel to improve and enhance internal capabilities. Services provided are not intended to replace or displace in-house efforts or Suez personnel.
- 5) Establishes confidence in your office that the approach promoted herein is effective, efficient, and consistently reliable on non-metallic piping.
- 6) Pending a positive review of the pilot survey in D2 South, expands the scope of work to include the remainder of the Harrisburg system and the Bloomsburg, Dallas, Shavertown, and Mahoning Township systems.

BACKGROUND

Different philosophies are promoted for water leak detection. It is quite common to utilize a combination of appurtenance sounding and logging to identify noisy areas of a system then employ hand-held acoustics and correlation to pinpoint. The advent of correlating loggers adds to the versatility. You have first hand evidence that this approach can work quite effectively on metallic piping but often comes up lacking when non-metallic piping comprises a significant makeup of the distribution system. Unless there is reason to doubt your total and sub-metered pumpage records the data must be taken at face value. This means that either water leaks are not being found, or they are not being found fast enough to impact a reduction in un-accounted for loss.

It is my experience that contact leak surveys, even with the latest loggers, correlators, and acoustics, work inconsistently on AC piping and can be nearly useless on plastic piping. Non-metallic piping does not readily transmit and transfer sound between the available contact appurtenances of the system. This condition does not lend well to performing contact-only leak surveys. It is important to remember that this is a limitation of the physical properties of the non-metallic pipe material and not necessarily the equipment.

As simplistic as it sounds, one of the most reliable methods to compensate for this limitation is to employ the use of a ground microphone as the primary search means. A ground microphone survey places emphasis on listening for the impact noise of the leak rather than the linear resonance propagated along the pipe.

Conducting a ground microphone leak survey is normally not labor intensive but can be time intensive. A ground microphone leak survey typically listens at intervals of 6-12 feet over mains that run under or adjacent to paved surfaces. Long-side services are also normally miked across the street. Contact leak surveys typically anticipate coverage of ~ 5 miles/ eight hour day. Depending on local traffic conditions and whether the area is residential or commercial a ground microphone survey may only cover 3-4 miles/ eight hour day. Another big unknown is how many leaks will be identified. Leak frequency can hugely impact survey duration as it takes time to pinpoint leaks. I typically expect to find one leak for every two miles of distribution piping but have performed leak surveys where both high/low extremes were encountered. Two of the most obscure were four leaks on 45 miles that accounted for 300K GPD, and another where the ratio was nearly one leak per mile on a 77 mile system.

It is even more important to select a time slot when listening conditions are conducive to leak detection. Except in rare instances, loggers are typically programmed to listen during night hours when usage, traffic, construction, and other interfering daytime noises are minimized or absent. Manual leak detection and pinpointing can be enhanced and streamlined quite significantly by also listening at night. Furthermore, nighttime leak detection can be much more efficient and effective than typical daytime leak surveying regardless of pipe material. Some quiet, low traffic subdivisions may allow for daytime surveying but it is anticipated that 75% of the work at Harrisburg will be performed during night hours.

LEAK SURVEY SPECIFICS

The D2 South zone contains both transmission and distribution piping. While huge leaks are infrequent they do occur, and large bore, high pressure transmission lines are one of the few places where an extremely large leak can exist without compromising delivery to the rest of the system. It is proposed to target the transmission mains through D2 South first. This will require direct assistance from Suez personnel to identify location and access appurtenances. All leak survey options are on the table: correlation (acoustic accelerometers and/or hydrophones), contact listening, ground miking, etc. It will likely be required to use a combination of techniques to properly sound the transmission mains; the best method will be determined as on-site conditions demand. It is anticipated that several days/nights will be required to cover the transmission mains through D2 South. A start date from mid-July to early August is proposed to run the transmission mains.

Once the transmission mains are inspected focus will turn to the distribution piping in D2 South. It is preferred to start at the highest pressure or most distant edge of a system and work back toward source though this is not always possible. All non-metallic piping will be inspected with a ground microphone, and isolated or stray metallic legs within a predominantly non-metallic area will be similarly inspected. Metallic subdivisions will be inspected using a typical contact sounding technique unless otherwise requested. The best effort will be made to systematically work the system to avoid leaving loose ends. A start date of mid-September is proposed to commence leak survey on the distribution piping in D2 South. Efforts will be made to finish the ~ 135 miles of the pilot survey in D2 South before Thanksgiving 2018.

Long spans of non-metallic water lines that run between the homes in right-of-ways may require valving to zone down and isolate potential leakage. No main or service valves will be opened or closed unless Suez personnel are present. Available equipment will include, but not be limited to, the following: Gutermann Aquascope, Utilitronics Leak Hunter, Heath Aquascope, Gutermann Aquascan 6500 Correlator, Gutermann PAL 300.

Each leak will be pinpointed, marked for repair, estimated for size, and reported on an individual leak report form. It is anticipated that most work will be performed during night hours between 12:00 AM and 6:00 AM to circumvent high traffic noise. Some subdivisions may be quiet enough to conduct searching during daylight hours; this will be determined on a case by case basis.

ASSISTANCE, COORDINATION, MANPOWER

Suez personnel will be required to assist during the transmission survey phase and may be asked to assist in the commercial areas. Suez personnel will not be required to provide full-time help in the residential distribution areas but should be available to answer questions if necessary. Efforts will be made to work directly with Suez personnel in actual leak survey activities after approximately 40% of the non-metallic piping is inspected in D2 South. This will allow for a survey profile to be established to better assess coverage, leak frequency, and any snags attributable to the personality of the system.

The primary objective of this leak survey is to obviously reduce leakage in the Harrisburg system in the most reliable and effective manor possible. A strong secondary objective is to work directly with Suez leak detection personnel to improve and enhance internal leak detection efforts. This will entail both complementary (working with) and supplementary (working nearby) scheduling. It will also entail assessment of equipment and survey techniques. All equipment and techniques can be used to find leaks, but equipment and techniques all have limitations depending on local circumstances. Everyone performing leak detection has a preference for a specific piece of equipment. We rely on that as a default crutch, and sometimes a different device or technique will be better under certain conditions.

Two professional associates may be brought in to facilitate faster completion of the pilot and general leak survey if awarded. Multiple people provide a level of safety and efficiency that cannot be matched with a single person. Again, an objective of the pilot survey is to establish confidence in your office that consistent, reliable results are being achieved whether working alone, with associates, or with Suez personnel.

It is advantageous to have valves uncovered and accessible prior to commencing a leak survey. This is particularly helpful in the metallic and AC areas to facilitate correlation. Unless specifically requested it will not be necessary to provide access to main valves on plastic piping as correlation across a block span on plastic is not realistic. What is extremely beneficial on plastic is to mark the curb to identify curb boxes and service locations. If curb boxes are not available it may be necessary to enter some homes and sound the services to confirm suspected leak indications. Residences will not be entered without knowledge or authorization from Suez.

High wind greatly complicates leak searching, particularly when utilizing a ground microphone. For this reason 10 mph winds or greater is generally used as a cutoff point to suspend leak searching. As the proposed RFP spans 2018 and 2019 it will also be necessary to set up guidelines for conducting the leak survey during winter months.

COST

Cost for the pilot survey will be \$165.00/hour with a not-to exceed limit of \$49,000.00 for 135 miles of piping in the D2 South zone; time will be invoiced weekly. If you wish to schedule these services please allow three-week's notice to proceed. Once commenced, work will be completed as expeditiously as weather permits. Please do not hesitate to call if you have any further questions regarding this proposal.

Sincerely,

David B. Bonkovich

David B. Bonkovich

Metzler, Steven

From: thedtecter@aol.com
Sent: Monday, June 18, 2018 3:19 PM
To: Metzler, Steven
Subject: References

Steve:

Please feel free to contact any or all of the following references:

Paul Swangren, Director of Public Works, Ephrata Area Joint Authority	717-738-9242
Doug Yerger, Director of Public Works, Borough of Pottstown	610-970-6529
Joe Woodward, Manager of Central Operations, PA American Water	717-7903020
Paula Shareno, Warren Division Manager, PA American Water	814-730-3154
Steve Demofont, Northwest PA Regional Supervisor, PA American Water	724-591-4889
Glynn Kindelan, Bear Valley Water Authority	717-414-8836
J H Russell, Audubon Water	207-380-6963
Pat Burke, Manager of State Operations, Aqua PA Water	570-274-0294

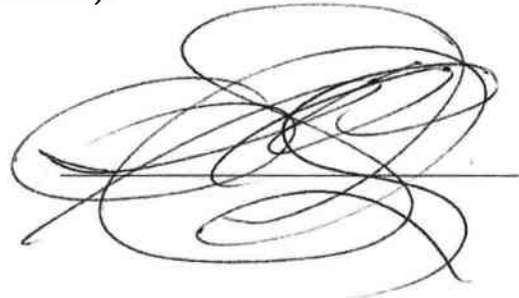
Dave Bonkovich

VERIFICATION

I, James C. Cagle, hereby state that the facts set forth above are true and correct to the best of my knowledge, information and belief and that I expect to be able to prove the same at a hearing held in this matter. I understand that the statements herein are made subject to the penalties of 18 Pa. C.S. § 4904 (relating to unsworn falsification to authorities).

Date:

10/3/18

A handwritten signature in black ink, appearing to be "James C. Cagle", written over a horizontal line. The signature is highly stylized and somewhat illegible due to the cursive and overlapping nature of the strokes.

SUEZ WATER PENNSYLVANIA INC.

DIRECT TESTIMONY OF

JAMES C. CAGLE

REGARDING

RATEMAKING CONSIDERATIONS

RESULTING FROM THE

TAX CUTS AND JOBS ACT

BEFORE THE

PENNSYLVANIA PUBLIC UTILITY COMMISSION

DOCKET NO. R-2018-3000834

April 30, 2018

SWPA STATEMENT NO. 3
DIRECT TESTIMONY OF JAMES C. CAGLE
REGARDING RATEMAKING CONSIDERATIONS RESULTING
FROM THE TAX CUTS AND JOBS ACT

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I. INTRODUCTION

Q. Please state your name and business address.

A. I am James C. Cagle. My business address is 461 From Road, Paramus, NJ 07652.

Q. By whom are you employed and in what capacity?

A. I am the Vice President, Rates and Regulatory Affairs for United Water Management & Services Inc.

Q. What are your job responsibilities?

A. I am primarily responsible for the management and direction of rate case filings for the Company. I am also responsible for oversight of certain rate related compliance and reporting requirements as prescribed by the various regulatory Commissions having jurisdiction over the Company.

Q. Please outline your educational and professional qualifications.

A. I received a Bachelor of Accountancy degree from the University of Oklahoma in 1987 and am a Certified Public Accountant licensed in the State of Texas. I was initially employed by United Water M&S as Director, Regulatory Business in October of 2007 and have held my current position since March 2010. Previous to that, I was employed by Atmos Energy Corporation, a natural gas utility operating in twelve states, as Manager, Rates and Revenue Requirements. I have testified before several other state commissions on various regulatory

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1 issues.

2

3

II. PURPOSE AND OUTLINE

4 **Q. What is the purpose of your testimony in this proceeding?**

5 A. The purpose of my testimony is to present the ratemaking considerations
6 included in this case resulting from the Tax Cuts and Jobs Act (TCJA).

7

8

III. EXHIBIT LIST

9 **Q. Have you prepared attachments to accompany your testimony?**

10 A. Yes, I am sponsoring UWPA Exhibit No. JCC-1 which shows the accumulated
11 deferred income tax and excess deferred income tax regulatory liability balances
12 as of December 31, 2017.

13

14

IV. Tax Cuts and Jobs Act

15 **Q. Please describe the TCJA.**

16 On December 22, 2017, the President signed into law the "Tax Cuts and Jobs
17 Act" ("TCJA") which substantially modifies the Internal Revenue Code and has a
18 direct impact on SUEZ Water Pennsylvania Inc. ("SWPA" or "Company") and
19 other regulated utilities. At a minimum, the passage of the TCJA was highly
20 partisan and, according to many projections will add substantially to the Federal
21 deficit over time. It is likely that in the near future, substantial changes could
22 again be made to the Code which could also impact the Company. As a result,
23 due to the level of uncertainty, the Company's proposed ratemaking treatments

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1 in this response are made with an eye to this future probability.

2

3 **Q. What modifications have effected SWPA?**

4 A. As currently in place, the modification having the greatest direct impact on SWPA
5 is the reduction of the corporate income tax rate from 35% to 21%. This change
6 reduces both current and deferred Federal Income Tax Expense for the Company
7 and reduces the amount of Accumulated Deferred Income Tax (ADIT) required
8 to be recognized on the Company's balance sheet. In addition, the TCJA
9 eliminated the exemption for water and sewer utilities from recognizing
10 Contributions in Aid of Construction (CIAC) as taxable income.

11

12 **Q. What has the Company done to record these impacts in its books and**
13 **records?**

14 A. Generally Accepted Accounting Principles (GAAP) require that the Company
15 reflect the effects of the change in ADIT in the 2017 financial statements resulting
16 from the change in the FIT rate from 35% to 21%. Also, because SWPA is rate
17 regulated and subject to the jurisdiction of the Pennsylvania Public Utility
18 Commission ("Commission"), that change in the total balance of ADIT has been
19 reflected as a regulatory liability on the Company's balance sheets as of
20 December, 31, 2017.

21

22 The change in FIT rate impacts the Company's ongoing income tax expenses
23 beginning January 1, 2018. Consequently, the Company has, and will continue

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1 to, calculate the difference in income tax expense at the 35% vs. the 21% rates
2 beginning January 2018 and record this difference to a regulatory liability until
3 such time as the Company's rates are updated to reflect the reduction in income
4 tax rates. The Company makes this calculation based upon actual monthly
5 results.

6
7 The application of provisions of the TCJA are complex. An example of the
8 recognition of this complexity is Securities and Exchange Commission 17 CFR
9 Part 211 [Release No. SAB 118] Staff Accounting Bulletin No. 118, which is
10 applicable to publicly traded companies under the jurisdiction of the SEC, allows
11 corrections up to one year from the date of implementation stating: "The
12 measurement period begins in the reporting period that includes the Act's
13 enactment date and ends when an entity has obtained, prepared, and analyzed
14 the information that was needed in order to complete the accounting
15 requirements under ASC Topic 740. During the measurement period, the staff
16 expects that entities will be acting in good faith to complete the accounting under
17 ASC Topic 740. The staff believes that in no circumstances should the
18 measurement period extend beyond one year from the enactment date."

19
20 **Q. Please describe the calculation of the Excess ADIT.**

21 A. As of 12/31/2017, the Company made a calculation of the required amount of
22 federal accumulated deferred income taxes required reflecting the change in

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1 income tax rate from 35% to 21%. The net change, or excess ADIT, resulting
2 from the calculation was recorded as a regulatory liability. This regulatory liability
3 was then "grossed-up" to reflect the tax effect at 21% of the regulatory liability
4 including state income tax. The "gross-up" creates an equal and offsetting
5 deferred tax asset which is included in the overall ADIT of the Company. As a
6 result, the amount of ADIT plus the amount of the grossed-up regulatory liability
7 is equivalent to the ADIT before reflection of the effects of the TCJA. These
8 amounts are shown on Exhibit JCC-1.

9
10 **Q. Please describe the Company's proposed treatment in this case of the**
11 **resulting regulatory liability.**

12 It is clear that the regulatory liability established (or portion thereof) which was
13 contributed by customers should be returned to customers over time and the
14 Company is proposing this amount be amortized as a reduction to base rates.

15
16 **Q. What is the proposed amortization period?**

17
18 **A.** The amortization period for the amount of the regulatory liability which arose from
19 normalized amounts is considered "protected" and, per the Code, shall be
20 amortized no faster than over the period in which ADIT would have otherwise
21 reversed. The amortization period for the amount of the regulatory liability which
22 arose from amounts not considered normalized are "unprotected" and, may be
23 amortized over a period different from the protected amount.

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1 In addition, the Average Rate Assumption Method (ARAM) must be utilized if
2 possible for as much of the regulatory liability for which the Company has the
3 ability to do so. The remaining amount may be amortized utilizing the “alternative
4 method” (more commonly, the “Reverse South Georgia (RSG) Method”).

5

6 Currently, the Company is reviewing in detail its income tax records in order to
7 verify the balance of the regulatory liability subject to continued normalization
8 (protected) as well as those that are not (unprotected). The review is also
9 determining amounts subject to ARAM amortization of RSG amortization.
10 However, subject to the completion of the above review, the Company believes
11 the amortization period utilizing the “alternative method” as allowed by the TCJA
12 is approximately 40 years and has utilized this period in this filing pending the
13 outcome of its analysis.

14

15 **Q. Has the Company incorporated the TCJA impact of the change in tax rates**
16 **for the 2018 impacts as mentioned above?**

17 A. No. On January 5, 2018, the Commission opened Docket M-2018-2641242
18 investigating the impacts of TCJA, this filing does not include treatment of that
19 amount pending a further Commission Order in that docket.

20

21 **Q. How are these changes incorporated into the Company’s filing?**

22 A. As summarized on Exhibit No. CEH-1 as sponsored by Ms. Heppenstall, deferred
23 federal income taxes are included as of December 31, 2017. This balance is

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1 consistent with Exhibit JCC-1 and includes the net amount of the regulatory
2 liability resulting from excess ADIT. As summarized on Exhibit No. CEH-2,
3 Schedule 34, Adjustment No. 33 as sponsored by Ms. Heppenstall income tax
4 expense included in the revenue requirement in this case is calculated utilizing
5 the 21% federal income tax rate. This exhibit also includes the incremental
6 change in deferred income taxes through December 31, 2019 but excludes the
7 reduction of the regulatory liability portion due to its amortization pending the
8 outcome of the Company's analysis and any further Orders from docket M-2018-
9 2641242.

10 Exhibit JCC-1 shows the calculation of the regulatory liability balance as of
11 December 31, 2017 and the amortization over an assumed 40 year RSGM
12 amortization period. As described above, the Company is currently reviewing all
13 of its income tax records and the results of that review may require changes to
14 both the amount of the regulatory liability, the amounts considered protected and
15 unprotected as well as the amortization period. The amortization amount is
16 included on Exhibit No. CEH-2, Schedule-33, Adjustment No. 32 as sponsored
17 by Ms. Heppenstall.

18
19 **Q. Are the amounts of the Federal ADIT balances as well as the resulting**
20 **regulatory liabilities “set in stone” at this point?**

21 **A.** No. The complexity of the accounting related to the TCJA is such that changes
22 to the Federal ADIT balance and/or the balance of the regulatory liability could
23 occur as the Company continues to review and analyze its December 2017

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1 entries to record the impact of the TCJA changes. As such, the Company
2 reserves the option to supplement this and other related testimony to reflect such
3 updates which are essential to the correct calculation of the impact of the TCJA
4 on rates in this case. In addition, the ratemaking treatment of these items could
5 be impacted by the Commission's decisions in M-2018-2641242.

6

7 **Q. Please describe the TCJA modification as it relates to Contributions in Aid**
8 **of Construction.**

9 A. The TCJA eliminated the exemption for water and sewer utilities from recognizing
10 Contributions in Aid of Construction ("CIAC") as taxable income. CIAC for both
11 electric and gas utilities have been taxable since at the Tax Reform Act of 1986.
12 As a result of the taxability of the contribution, utilities commonly required the
13 contributor to pay for the income tax consequences of the taxability of the
14 contribution so that the utility's customers would not subsidize the contributor.
15 While water and Sewer utilities had been exempt from the "taxable CIAC" since
16 1996, the TCJA eliminated that exemption.

17 The Company has investigated how taxable CIAC has been addressed in other
18 of SUEZ' regulatory jurisdictions and would propose that SWPA be authorized to
19 gross-up the CIAC charged to developers at the net present value of cash flows
20 resulting from the taxability of the CIAC and the future deductibility for income tax
21 purposes of the resulting asset. Additionally, the Company would propose that
22 the deferred income tax impact of such a transaction be held outside of the

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1 ratemaking process such that water service customers are not impacted. The
2 Company would also propose to utilize the actual structure and debt cost rate of
3 SUEZ Water Resources (SWPA's immediate parent) and the water proxy group
4 return on equity amount in effect as of December 31 of each year. The Company
5 proposes to update this calculation once per year.

6 The TCJA's elimination of the exemption of water and sewer companies does not
7 impact either SWPA's regulatory liability or the ongoing change in total income
8 tax expenses for ratemaking purposes resulting from the TCJA. Therefore,
9 consistent with the proposed treatment outlined above, the deferred income tax
10 asset resulting from projected CIAC in this case has been excluded from rate
11 base in this filing.

12
13 **Q. Does this conclude your direct testimony?**

14 **A. Yes, it does.**

SUEZ Water Pennsylvania Inc.
 Accumulated Deferred Income Tax and Excess Deferred Income Tax Regulatory Liability Balances
 As of December 31, 2017

Exhibit JCC-1

Line No.	Account	Description	ADIT Balance at 12/31/2017	Adjustments	Adjusted Balance at 12/31/2017	Rate Base Related ADIT	Protected @ 21% FIT Rate	Unprotected @ 21% FIT Rate
	(a)	(b)	(c)			(d)	(e)	(f)
1	19010	Def. Federal Inc Taxes- Other	\$15,085		\$15,085			
2	28203	Def. FIT-MACRS	15,997,032		\$15,997,032	\$15,997,032	\$15,997,032	
3	28206	Def FIT Pens Reg Asset FAS158	2,314,595		\$2,314,595			
4	28211	Def FIT PBOP Reg Asset FAS158	(637,134)		(\$637,134)			
5	28300	Def. FIT Benefit on DSIT	44,282		\$44,282			
6	28301	Def. FIT-Other	93,930		\$93,930			
8	28303	Def. FIT-Rate Expenses	36,775		\$36,775			
9	28304	Def. FIT-Deferred Charges	7,343		\$7,343			
11	28306	Def. FIT-M_S Fees	(336,771)		(\$336,771)			
12	28307	Def. FIT-Pensions	(1,644,755)		(\$1,644,755)			
13	28308	Def. FIT-PEBOP	977,923		\$977,923			
14	28310	Def. FIT-Cost of Removal	707,850		\$707,850	707,850	707,850	
15	28311	Def. FIT-Uncollectibles	(53,674)		(\$53,674)			
16	28312	Def. FIT-Injuries and Damages	(192,319)		(\$192,319)			
17	28313	Def. FIT - AFUDC Equity	1,209,317		\$1,209,317	1,209,317	1,209,317	
19								
20		Total Deferred Tax before TCJA impact [3]	18,539,479		18,539,479	17,914,199	17,914,199	
21								
22	28405	Def FIT - New Federal Tax Rate	(7,415,788)		(7,415,792)	(7,165,680)	(7,165,680)	0
	28406	Def FIT-New Federal TaxRate GU	(3,013,135)		(3,013,136)	(2,911,512)	(2,911,512)	0
23		283 Deferred Income taxes & ITC	\$8,110,556	\$0	\$8,110,561	\$7,837,007	\$7,837,007	\$0
24								
25	25316	Regulatory Liab-Tax New Federal Rate	\$10,428,924	\$0	\$10,428,928	\$10,077,192	\$10,077,192	\$0
26								
		Total ADIT and Regulatory Liability after TCJA Impact (line 26 plus line 29)	\$18,539,479		\$18,539,479	\$17,914,199		
27								
28								
		Amortization of the Rate Base Related Regulatory Liability amount utilizing the RSGM (estimated) over 40 years				\$265,189		
29								

[1] Change in balances is offset by the change in valance of AOCI

[2] Change in balance is offset by the change in balance of the associated regulatory asset.

[3] Sum of Lines 1 through 22

SUEZ WATER PENNSYLVANIA INC.

REBUTTAL TESTIMONY OF

JAMES C. CAGLE

REGARDING

RATEMAKING CONSIDERATIONS

RESULTING FROM THE

TAX CUTS AND JOBS ACT

BEFORE THE

PENNSYLVANIA PUBLIC UTILITY COMMISSION

DOCKET NO. R-2018-3000834

August 17, 2018

SWPA STATEMENT NO. 5
REBUTTAL TESTIMONY OF JAMES C. CAGLE
REGARDING RATEMAKING CONSIDERATIONS RESULTING
FROM THE TAX CUTS AND JOBS ACT

1

I. INTRODUCTION

2 **Q. Please state your name and business address.**

3 A. I am James C. Cagle. My business address is 461 From Road, Paramus, NJ
4 07652.

5

6 **Q. Are you the same James Cagle that prefiled direct testimony in this
7 docket?**

8 A. Yes

9

10 **Q. What is the purpose of your rebuttal testimony in this proceeding?**

11 A. The purpose of my testimony is to discuss the recommendations and comments
12 made by Lafayette Morgan on behalf of OCA related to the amortization of the
13 TCJA regulatory liability, the associated protected vs. unprotected amounts, and
14 the gross-up of contributions in aid of construction. I will also discuss the
15 recommendations and comments made by Brenton Grab from I&E related to the
16 FTY and FPFTY TCJA regulatory liability balances, excess 2018 income taxes,
17 and the common asset allocation associated with SWM&S. Additionally, I will
18 address Daniel Durden's comments regarding CIAC.

19

20

II. EXHIBIT LIST

21 **Q. Have you prepared attachments to accompany your testimony?**

22 A. Yes, I am sponsoring **SWPA Exhibit No. JCC-1 Rebuttal** which shows the
23 accumulated deferred income tax and excess deferred income tax regulatory

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1 liability balances as of December 31, 2017 revised for certain changes discussed
2 below.

3

4 **Q. In your initial testimony, you stated that the Company is reviewing in**
5 **detail its income tax records in order to verify the balance of the**
6 **regulatory liability subject to continued normalization (protected) as well**
7 **as those that are not (unprotected). Have you received the results of this**
8 **analysis?**

9 A. Yes. Earlier this year, the Company began a review of its ADIT balances. I
10 received the results of the review in early August, 2018. As a result of the
11 outcome of this review, I have incorporated the changes in **Exhibit JCC-1**
12 **Rebuttal** which reflects the adjustments noted. As such, the Company is now
13 confident in the amount of ADIT in protected and non-protected categories.
14 While the changes for SWPA were small, the correct balances as of 12/31/2017
15 are now known.

16

17 **Q. Regarding Exhibit JCC-1 Rebuttal, please discuss the protected vs.**
18 **unprotected amounts.**

19 A. Of the total amount of ADIT, MACRS, Cost of Removal and AFUDC Equity are
20 attributable to rate base and therefore includible in the calculation for
21 ratemaking purposes. MACRS is clearly related to continued normalization and
22 is therefore protected.

23

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1 Generally, the portion of the regulatory liability balance related to the use of
2 accelerated tax depreciation is protected and the portion of the regulatory liability
3 balance related to items not related to the use of accelerated tax depreciation are
4 unprotected. Therefore, one would need to determine the amount of the
5 regulatory liability related to each, amortize the protected portion over the
6 appropriate ARAM period (as discussed below), and amortize the unprotected
7 portion over an appropriate period for the benefit of customers.

8
9 As related to a protected amount, the Company's book basis of assets includes
10 AFUDC Equity as a part of the book cost of assets and includes both the accrual
11 of Cost of Removal through depreciation rates as well as the actual cost of
12 removal incurred as part of accumulated depreciation. For tax purposes, the
13 timing of income and deductions gives rise to book/tax temporary differences and
14 AFUDC Equity and Cost of Removal are an integral part of the book/tax
15 temporary difference for Plant. As a result, these amounts have a direct impact
16 on the timing in which the Plant book/tax temporary difference reverses over the
17 regulatory life of the property. In light of this, categorizing these items as
18 unprotected would not be appropriate since these amounts could have a direct
19 impact on ARAM used in determining the amortization period of protected
20 amounts.

21
22 To the Company's knowledge, no IRS interpretive guidance has been issued to
23 date for any relevant provisions of the TCJA and there are differences in opinion

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1 on this issue among our peers in the industry. Therefore, the Company believes
2 that these amounts should be categorized as protected at least until such time as
3 there is certainty on this topic. This categorization can be revisited in future rate
4 cases. The Company has classified Cost of Removal and AFUDC equity also as
5 protected.

6

7 **Q. Please discuss the Company's estimated amortization period of 40 years**
8 **of the regulatory liability arising from the change in income tax rate from**
9 **35% to 21%.**

10 A. As noted in my direct testimony, as of 12/31/2017, the Company made a
11 calculation of the required amount of federal accumulated deferred income taxes
12 required -- reflecting the change in income tax rate from 35% to 21%. The net
13 change resulting from the calculation was recorded as a regulatory liability and
14 then "grossed-up" to reflect the tax effect at 21% of the regulatory liability.

15

16 In its filing, the Company amortized this amount over a 40-year amortization
17 period under the "Alternative Method" or "Reverse South Georgia Method"
18 ("RSGM"). Since filing, the Company has determined that it can and therefore
19 must use the Average Rate Assumption Method ("ARAM") of amortization for at
20 least the period in which records are sufficient. If the Company's records are
21 insufficient for older periods, that portion should utilize the RSGM. To amortize
22 the regulatory liability over a period shorter than the ARAM calculation generates
23 would be considered a normalization violation under the TCJA. The Company is

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1 in the process of determining these amounts for all its utilities.

2

3 Specifically, the act states in SEC. 1561 beginning in part (d):

4

5 (d) NORMALIZATION REQUIREMENTS.—

6

7

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(1) IN GENERAL.—A normalization method of accounting shall not be treated as being used with respect to any public utility property for purposes of section 167 or 168 of the Internal Revenue Code of 1986 if the taxpayer, in computing its cost of service for ratemaking purposes and reflecting operating results in its regulated books of account, reduces the excess tax reserve more rapidly or to a greater extent than such reserve would be reduced under the average rate assumption method.

(2) ALTERNATIVE METHOD FOR CERTAIN TAXPAYERS.—If, as of the first day of the taxable year that includes the date of enactment of this Act— (A) the taxpayer was required by a regulatory agency to compute depreciation for public utility property on the basis of an average life or composite rate method, and (B) the taxpayer's books and underlying records did not contain the vintage account data necessary to apply the average rate assumption method, the taxpayer will be treated as using a normalization method of accounting if, with respect to such jurisdiction, the taxpayer uses the alternative method for public utility property that is subject to the regulatory authority of that jurisdiction.

(3) DEFINITIONS.—For purposes of this subsection—

(A) EXCESS TAX RESERVE.—The term "excess tax reserve" means the excess of— (i) the reserve for deferred taxes (as described in section 168(i)(9)(A)(ii) of the Internal Revenue Code of 1986) as of the day before the corporate rate reductions provided in the amendments made by this section take effect, over (ii) the amount which would be the balance in such reserve if the amount of such reserve were determined by assuming that the corporate rate reductions provided in this Act were in effect for all prior periods.

(B) AVERAGE RATE ASSUMPTION METHOD.—The average rate assumption method is the method under which the excess in the reserve for deferred taxes is reduced over the remaining lives of the property as used in its regulated books of account which gave rise to the reserve for deferred taxes. Under such method, during the time period in which the timing differences for the property reverse,

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1 the amount of the adjustment to the reserve for the deferred taxes
2 is calculated by multiplying— (i) the ratio of the aggregate deferred
3 taxes for the property to the aggregate timing differences for the
4 property as of the beginning of the period in question, by H. R. 1—
5 47 (ii) the amount of the timing differences which reverse during
6 such period.
7

8 (C) ALTERNATIVE METHOD.—The “alternative method” is the
9 method in which the taxpayer— (i) computes the excess tax reserve
10 on all public utility property included in the plant account on the
11 basis of the weighted average life or composite rate used to
12 compute depreciation for regulatory purposes, and (ii) reduces the
13 excess tax reserve ratably over the remaining regulatory life of the
14 property.
15

16 (4) TAX INCREASED FOR NORMALIZATION VIOLATION.—If, for any
17 taxable year ending after the date of the enactment of this Act, the
18 taxpayer does not use a normalization method of accounting for the
19 corporate rate reductions provided in the amendments made by this
20 section— (A) the taxpayer’s tax for the taxable year shall be increased by
21 the amount by which it reduces its excess tax reserve more rapidly than
22 permitted under a normalization method of accounting, and (B) such
23 taxpayer shall not be treated as using a normalization method of
24 accounting for purposes of subsections (f)(2) and (i)(9)(C) of section 168
25 of the Internal Revenue Code of 1986.
26

27 As the Company is in the process of determining the amortization, in order to
28 protect the Company as well as its customers from any negative impact from such
29 a normalization violation, the Company would propose that the difference
30 between the amount of the amortization determined in this case and the amount
31 of amortization required under the above section be deferred and trued up in the
32 Company’s next rate case filing. The Company believes such a mechanism fully
33 preserves the benefits of normalization and of the amortization for ratepayers. I
34 believe this is consistent with Mr. Morgan’s recommendation on this issue.
35

36 The Company believes such a mechanism is also needed to capture any

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1 potential adjustments to the regulatory liability including any “tax return to
2 provision” adjustments likely made once the Company’s 2017 income tax return
3 is filed.

4

5 **Q. Mr. Morgan’s testimony includes a statement on page 34 that the Company**
6 **did not reflect the amortization of the TCJA regulatory liability in its revenue**
7 **requirement. Is this correct?**

8 A. No. The Company included the amortization of the regulatory liability
9 appropriately as an amortization expense and therefore the appropriate income
10 tax calculation is made within the revenue requirement calculations. Basically,
11 once the amount of excess ADIT was grossed-up and reclassified as a
12 regulatory liability, it ceased being a “tax” expense and becomes an
13 amortization expense. It is my understanding that Mr. Morgan included this
14 amount as a reduction to income tax expense which essentially double counts
15 the income tax impact of the amount. The Company appropriately grossed-up
16 the amount to reflect the ADIT impact of the regulatory liability and recorded the
17 amortization of the regulatory liability as a “regular expense.”

18

19 **Q. Did the Company incorporate the TCJA impact of the change in tax rates**
20 **for the 2018 impacts as mentioned above?**

21 A. No. On January 5, 2018, the Commission opened Docket M-2018-2641242
22 investigating the impacts of TCJA, this filing did not include treatment of that
23 amount pending a further Commission Order in that docket. However, as this

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1 amount is to be dealt with in this docket, the Company calculated an estimated
2 amount and proposed in discovery to amortize this amount over a three-year
3 period.

4
5 **Q. What is Mr. Grab's proposal for returning this amount to ratepayers?**

6 A. Mr. Grab proposes that this amount be returned to ratepayers through a surcredit
7 mechanism over a one-year period beginning at the date of implementation of
8 new rates from this case and that a 13th month be utilized for any over or under
9 recovery as a recalculated surcharge. He also suggests that one year of the
10 amortization of the TCJA regulatory liability be included in this surcredit amount.

11
12 **Q. Is this a reasonable proposal?**

13 A. Returning the amount through a surcredit mechanism over a 12-month period is
14 certainly possible if ordered by the Commission. However, the Company would
15 propose that any over/under resulting from the actual amount of the accumulated
16 regulatory liability, as well as any over/under resulting from differences in the
17 regulatory liability and the actual amount returned to ratepayers through the
18 surcredit mechanism, be addressed in a future rate filing. This difference in
19 approach is from a purely pragmatic standpoint. The amount of over/under would
20 not be known until the last day of the 12-month period. The process, as I
21 understand Mr. Grab's suggestion, would require an immediate recalculation of
22 the surcredit just for the over/under amount which would have to then be
23 implemented without sufficient review by the Commission. Even then, there

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1 would likely be some small over/under amount which would still have to be
2 addressed at a future date. Consequently, the Company believes stopping the
3 surcredit after the 12-month period and addressing any over/under amount in the
4 next case is the better alternative. The calculation of the estimated amount is
5 attached as **Exhibit JCC-2 Rebuttal** which includes the gross-up for income
6 taxes.

7
8 Additionally, the Company believes adding 12 months of amortization of the
9 TCJA regulatory liability is not necessary as the Company will not begin
10 amortization until resolution of this case. The amount would remain a reduction
11 to rate base. Ms. Heppenstall has reflected the surcredit mechanism and the
12 amortization of the regulatory liability beginning as described above in her
13 schedules.

14
15 **Q. Please address Mr. Grab's concerns regarding the presentation of ADIT in**
16 **the Company's initial filing.**

17 A. I have provided the amount of ADIT and TCJA regulatory liability to Ms.
18 Heppenstall for inclusion in her rebuttal schedules. These amounts correspond
19 to the amounts shown in **Exhibit JCC-1 Rebuttal** attached. As the amortization
20 of the TCJA regulatory liability will begin on the first day of the FPFTY, I reduced
21 the balance of the TCJA regulatory liability by the amount of the amortization and
22 made the appropriate change in ADIT to reflect the impact of the amortization.

23

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1 **Q. Please discuss Mr. Morgan's and Mr. Durden's comments relating to**
2 **taxable Contributions in Aid of Construction.**

3 A. I believe Mr. Morgan does not object to a gross-up on CIAC to be collected from
4 contributors but objects to utilizing a potentially inconsistent gross-up factor
5 related to the equity return rate over time. To clarify the Company's intention, in
6 order to avoid exactly such inconsistency, the equity return rate included in the
7 Company's proposal was to be only the "proxy group" equity return rate.

8
9 Mr. Durden suggested utilizing a "no gross-up" methodology whereby the
10 Accumulated Deferred Income Tax Asset ("DTA") created by the income tax
11 treatment would be included in rate base for general ratemaking purposes. It is
12 my understanding that this issue is being addressed in an ongoing Pennsylvania-
13 American Water Company case.

14
15 As the taxable nature of CIAC now impacts electric, gas and water utilities in the
16 same manner, the Company believes that consistent regulatory policy is critical
17 on this issue. Consistent policy "levels the playing field" in that everyone is
18 making the same calculations and applying a uniform Commission-mandated
19 policy as other states have done. It appears to the Company that there may be
20 significant variations even between electric and gas utilities as to this issue.

21
22 Because there is an open case where this issue is being discussed, the Company
23 proposes that the outcome of that case, be it a full gross-up, a net present value

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1 gross-up, or a no gross-up methodology, be applied uniformly to all Pennsylvania
2 water utilities and that specific policy and accounting guidance be included.

3

4 **Q. Please explain the Company's methodology of allocating the cost of**
5 **common assets.**

6 A. The common assets at issue are utilized to provide accounting, billing, and other
7 services to the Company's 15 utilities in six states. Pennsylvania's allocation is
8 approximately 9% of the total. The intent of the Company's calculation is to
9 include an amount which is equivalent to an amount which would be included in
10 rates if the assets were recorded on SWPA's books. The calculation is made by
11 calculating a "rate base" for the shared services assets and applying the return
12 component, utilizing the same return which is used for ratemaking purposes. By
13 recording the amounts as the Company proposes, ratepayers in each of the
14 Company's states are paying the same amount that would have been paid had
15 the assets been inappropriately split and recorded on the Books of each
16 individual utility. However, because it is a shared asset, the amount allocated to
17 each individual utility is appropriately adjusted for changes in allocation factors.

18

19 **Q. What is the Company's understanding of Mr. Grab's proposal?**

20 A. It is the Company's understanding that Mr. Grab is proposing that a percentage
21 based on a one-time allocation factor be applied to the book value of common
22 assets and then recorded on the books of SWPA. As an example, at the time a
23 common asset would be placed in service, a one-time allocation would be made

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1 and the allocated amount recorded on the books of each of the Companies to
2 which the common assets were providing service. So, if a common asset with a
3 book cost of \$1,000 was allocated to Pennsylvania utilizing an allocation factor
4 of 10%, \$100 would be recorded on SWPA's books. This would then be
5 depreciated over time. However, if in the following year, an acquisition was made
6 in another state such that the appropriate allocation factor would now be 8%,
7 \$100 would still be recorded on SWPA's books and PA ratepayers would be
8 unfairly burdened with the remaining cost of an asset.

9
10 **Q. Why is it appropriate to record common assets as the Company proposes?**

11 A. The Company does not believe that, from an accounting standpoint, it is
12 appropriate to record an asset on the books of a company that does not have
13 ownership of the asset. The Company believes that calculating a charge for
14 common assets rather than recording what could be considered a fictitious asset
15 is more appropriate. Because the calculation utilizes the same formulas that
16 would be made for ratemaking as if the asset was in rate base, the effect to the
17 ratepayer is identical and, as described above, consistent with the Company's
18 methodology. When the allocation factor changes, the amount charged to SWPA
19 is adjusted accordingly so that SWPA ratepayers are paying the correct amount.

20
21 **Q. Does this conclude your rebuttal testimony?**

22 A. Yes, it does. However, I reserve the right to submit supplemental testimony if
23 additional issues during the course of the proceeding.



SUEZ Water Pennsylvania Inc.
Accumulated Deferred Income Tax and Excess Deferred Income Tax Regulatory Liability Balances
As of December 31, 2017

JCC-1 Rebuttal

Line No.	Account	Description	ADIT Balance at 12/31/2017	Adjustments	Adjusted Balance at 12/31/2017	Rate Base Related ADIT	Protected @ 21% FIT Rate	Unprotected @ 21% FIT Rate
	(a)	(b)	(c)			(d)	(e)	(f)
1	19010	Def. Federal Inc Taxes- Other	\$15,085	\$28,035	\$43,119			
2	28203	Def. FIT-MACRS	15,997,032	(20,162)	\$15,976,871	\$15,976,871	\$15,976,871	
3	28206	Def FIT Pens Reg Asset FAS158	2,314,595		\$2,314,595			
4	28211	Def FIT PBOP Reg Asset FAS158	(637,134)		(\$637,134)			
5	28300	Def. FIT Benefit on DSIT	44,282		\$44,282			
6	28301	Def. FIT-Other	93,930		\$93,930			
8	28303	Def. FIT-Rate Expenses	36,775	(8,159)	\$28,616			
9	28304	Def. FIT-Deferred Charges	7,343		\$7,343			
11	28306	Def. FIT-M_S Fees	(336,771)		(\$336,771)			
12	28307	Def. FIT-Pensions	(1,644,755)		(\$1,644,755)			
13	28308	Def. FIT-PEBOP	977,923		\$977,923			
14	28310	Def. FIT-Cost of Removal	707,850		\$707,850	707,850	707,850	
15	28311	Def. FIT-Uncollectibles	(53,674)		(\$53,674)			
16	28312	Def. FIT-Injuries and Damages	(192,319)		(\$192,319)			
17	28313000	Def. FIT - AFUDC Equity	1,209,317		\$1,209,317	1,209,317	1,209,317	
19								
20		Total Deferred Tax before TCJA impact [3]	18,539,479	(286)	18,539,193			
21								
22	28405	Def FIT - New Federal Tax Rate	(7,415,788)	114	(7,415,677)	(7,157,615)	(7,157,615)	0
	28406	Def FIT-New Federal TaxRate GU	(3,013,135)	47	(3,013,090)	(2,908,236)	(2,908,236)	0
23		283 Deferred Income taxes & ITC	\$8,110,555	(\$125)	\$8,110,426	\$7,828,187	\$7,828,187	\$0
24								
25	25316	Regulatory Liab-Tax New Federal Rate	\$10,428,924	(\$161)	\$10,428,767	\$10,065,851	\$10,065,851	\$0
26								
27		Total ADIT and Regulatory Liability after TCJA Impact (line 26 plus line 29)	\$18,539,479		\$18,539,193			
28								
29		Amortization of the Rate Base Related Regulatory Liability amount utilizing the RSGM (estimated) over 40 years						

\$264,891

[1] Change in balances is offset by the change in valance of AOCI
[2] Change in balance is offset by the change in balance of the associated regulatory asset.
[3] Sum of Lines 1 through 22



Line No.	Description	Dec-17 Federal Income Tax Current Rates	Dec-17 State Income Tax Current Rates	Dec-18 Federal Income Tax Current Rates	Dec-18 State Income Tax Current Rates	Dec-18 Total Income Taxes	Dec-19 Federal Income Tax Current Rates	Dec-19 State Income Tax Current Rates	Dec-19 Total Income Taxes	Dec-19 Federal Income Tax Proposed Rates	Dec-19 State Income Tax Proposed Rates	Dec-19 Total Income Taxes Proposed Rates
1	Operating Income Before Income Taxes	\$ 20,648,526	\$ 20,648,526	\$ 16,897,453	\$ 16,897,453		\$ 18,692,663	\$ 18,692,663		\$ 24,875,462	\$ 24,875,462	
2	Interest Expense (1)	4,485,685	4,485,685	4,454,044	4,485,685		5,186,994	5,186,994		5,186,994	5,186,994	
3	State Income Tax	1,289,182		1,096,254			1,086,677			1,704,339		
4	Repair Adjustment on 2018 Additions			1,467,857	1,467,857							
5	Repair Adjustment on 2019 Additions						2,222,921	2,222,921		2,222,921	2,222,921	
9	Excess Of Tax Depreciation Over Book	3,042,455	3,258,114	71,872	282,414		506,570	717,113		506,570	717,113	
10	Taxable Income	<u>\$ 11,831,205</u>	<u>\$ 12,904,728</u>	<u>\$ 9,807,427</u>	<u>\$ 10,661,497</u>		<u>\$ 9,689,500</u>	<u>\$ 10,565,634</u>		<u>\$ 15,254,638</u>	<u>\$ 16,748,434</u>	
11	Income Tax Rate	35.00%	9.99%	35.00%	9.99%		35.00%	9.99%		35.00%	9.99%	
12	Pro Forma Income Tax : Current	4,140,922	1,289,182	3,432,599	1,065,084		3,391,325	1,055,507		5,339,123	1,673,169	
13	CTA Adjustment											
14	Amortization of Flow through Taxes			38,123	31,170		38,123	31,170		38,123	31,170	
15	Amortization of Income Tax Credit											
16	Total - Current Income Taxes	<u>\$ 4,140,922</u>	<u>\$ 1,289,182</u>	<u>\$ 3,470,722</u>	<u>\$ 1,096,254</u>		<u>\$ 3,429,448</u>	<u>\$ 1,086,677</u>		<u>\$ 5,377,246</u>	<u>\$ 1,704,339</u>	
Deferred Income Tax:												
17	Repair Adjustment			\$ 1,467,857			2,222,921			2,222,921		
18	Less: State Deduction (Fr. Sch.6-6)											
19	Income Tax Rate			35.00%			35.00%			35.00%		
20	Deferred Income Tax - Repair Adjustment			513,750			778,022			778,022		
21	Excess Of Tax Depreciation Over Book			\$ 71,872			\$ 506,570			\$ 506,570	\$ -	
22	Less: State Deferred Income Tax											
23	Income Tax Rate			35.00%	9.99%		35.00%	9.99%		35.00%	9.99%	
24	Deferred Income Tax - Tax/Book Deprec.			25,155			177,300			177,300		
25	Total Deferred Income Tax (L20+L24)			538,905			955,322			955,322		
26	Total Income Taxes (L16+L25)	<u>\$ 4,140,922</u>	<u>\$ 1,289,182</u>	<u>\$ 4,009,627</u>	<u>\$ 1,096,254</u>	<u>\$ 5,105,881</u>	<u>\$ 4,384,770</u>	<u>\$ 1,086,677</u>	<u>\$ 5,471,447</u>	<u>\$ 6,332,568</u>	<u>\$ 1,704,339</u>	<u>\$ 8,036,906</u>
Adjustment												
27	Rate Base	\$ 190,763,193	\$ 190,763,193	\$ 209,048,221	\$ 209,048,221		\$ 243,448,860	\$ 243,448,860		\$ 243,448,860	\$ 243,448,860	
28	Weighted Cost Of Debt	2.13%	2.13%	2.13%	2.13%		2.13%	2.13%		2.13%	2.13%	
29	Interest Expense (1)	<u>\$ 4,064,458</u>	<u>\$ 4,064,458</u>	<u>\$ 4,454,044</u>	<u>\$ 4,454,044</u>		<u>\$ 5,186,994</u>	<u>\$ 5,186,994</u>		<u>\$ 5,186,994</u>	<u>\$ 5,186,994</u>	
Total Income Taxes (Line 26) Original Filing				2,421,025	1,096,254		2,646,111			\$ 3,814,790		
Difference				12 Months	1,588,602		1,738,659			2,517,778		
				1 Month	132,383							
				13 Months	1,720,985							
				Amortization (36 Months)	47,806							
Reg Liability - 2018 FIT change from 35% to 21% - grossed-up				2,420,245								
							0.99%					
							21.00%					
							0.0999					
							0.9001					
							0.189021					
							28.89%					
							1.406					

VERIFICATION

I, Harold Walker III, hereby state that the facts set forth above are true and correct to the best of my knowledge, information and belief and that I expect to be able to prove the same at a hearing held in this matter. I understand that the statements herein are made subject to the penalties of 18 Pa. C.S. § 4904 (relating to unsworn falsification to authorities).

Date: October 10, 2018

Harold Walker III

**SUEZ WATER PENNSYLVANIA INC.
HARRISBURG, PENNSYLVANIA**

CASH WORKING CAPITAL

**DIRECT TESTIMONY
OF
HAROLD WALKER, III**

APRIL 2018

Prepared by:
GANNETT FLEMING
VALUATION AND RATE CONSULTANTS, LLC



Valley Forge, Pennsylvania

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1 **I. INTRODUCTION**

2 **Q. PLEASE STATE YOUR NAME AND ADDRESS.**

3 A. My name is Harold Walker, III. My business mailing address is P. O. Box 80794, Valley
4 Forge, Pennsylvania, 19484.

5 **Q. BY WHOM ARE YOU EMPLOYED AND IN WHAT CAPACITY?**

6 A. I am employed by Gannett Fleming Valuation and Rate Consultants, LLC as Manager,
7 Financial Studies.

8 **Q. WHAT IS YOUR EDUCATIONAL BACKGROUND AND EMPLOYMENT
9 EXPERIENCE?**

10 A. My educational background, business experience and qualifications are provided as
11 Appendix A.

12 **II. SCOPE OF TESTIMONY**

13 A. The purpose of my testimony is to recommend the appropriate working capital allowance
14 that Suez Water Pennsylvania, Inc. ("SWPA" or the "Company") should be afforded an
15 opportunity to earn on as part of its rate base claim.

16 My recommendation is based upon the results of a lead-lag study of SWPA that
17 was performed under my direct supervision. My testimony is supported by Exhibit HW-
18 1, which is composed of 27 Schedules.

19 **III. PRINCIPLES OF WORKING CAPITAL**

20 **Q. WOULD YOU PLEASE EXPLAIN THE RATEMAKING PRINCIPLES
21 CONCERNING THE INCLUSION OF WORKING CAPITAL AS AN ELEMENT
22 OF RATE BASE?**

23 A. Yes. The working capital allowance is a component of rate base. A utility's need for

1 working capital was first recognized in the noted Supreme Court case, *Smyth v. Ames*.¹
2 Among the many benchmarks established in the case was the "property devoted to public
3 use" doctrine as a basis for fixing rates. The case recognized that among the matters to be
4 considered in determining the value of property used was "the sum required to meet
5 operating expenses." Since that time, working capital has generally been recognized as a
6 proper item to be included in the rate base on which a utility is entitled to earn a return.

7 The rationale for the inclusion of working capital in rate base is to compensate
8 investors for the use of that amount of their funds over and above their investment in plant.
9 Working capital bridges the gap between the time funds are provided by investors to
10 provide service to the customer and the time the revenue requirement is received from those
11 customers as reimbursement for these services.

12 **IV. SUMMARY OF WORKING CAPITAL CLAIM**

13 **Q. WHAT ARE THE COMPANY'S WORKING CAPITAL CLAIMS?**

14 A. SWPA's working capital requirements are summarized on Schedule 1. The working
15 capital requirement is calculated by multiplying the net lag days (revenue lag days less
16 expense lead days) by the average operating expenses per day (total operating expenses /
17 365 days). I determine the Company's working capital through a Lead-Lag Study which
18 measured the net lag days required to finance the SWPA's operating expenses (O&M and
19 Taxes).

20 As shown on Schedule 1, I determine the Company's working capital for the future
21 test year ("FTY"), the fully projected year ("FPY"), and the fully projected future test year
22 ("FPFTY"). The cash working capital for FTY is \$821,760. The cash working capital

¹ *Smyth v. Ames*, 169 U.S. 466 (1898).

1 requirement for FPY is \$858,401 and the cash working capital requirement for FPPTY is
2 \$863,746.

3 **V. EXPLAINING A LEAD-LAG STUDY**

4 **Q. WHAT DOES A LEAD-LAG STUDY MEASURE AND HOW IS IT MEASURED?**

5 A. The lead-lag study in this testimony measures the level of funding required to operate on a
6 day-to-day basis in providing for the cost of O&M and Taxes. This is measured by
7 calculating the net lag between the amount of time elapsed between when a company
8 provides a service to its customers and when the company receives payments from its
9 customers, and the amount of time elapsed between when a company receives goods and
10 services and when the company pays its suppliers for those goods and services. The
11 difference between these two elapsed periods of time is known as the “net lag.”

12 The net lag is multiplied by the average daily cost of O&M and Taxes to determine
13 the cash working capital. Cash working capital for O&M and Taxes is included in rate
14 base to compensate investors for the use of their funds over and above their investment in
15 plant, and to provide investors with a return on the funds required by a company for daily
16 operations.

17 **Q. WHAT ARE THE COMPONENTS OF A LEAD-LAG STUDY?**

18 A. There are two primary elements of a lead-lag analysis, revenue lags and expense leads.
19 The revenue lag is the sum of three distinct components, the service period lag, the billing
20 lag, and the collection lag. The revenue lag is the elapsed time between the delivery of a
21 company’s product to its customers and when a company receives payment for the delivery
22 of the product. Investor-provided funds are required to keep a company running during
23 the revenue lag time period, when the revenue stream is temporarily insufficient to finance
24 daily operational needs.

1 The expense lead is the sum of two distinct factors, the service lead and the payment
2 lead. The expense lead is the elapsed time between when a good or service is provided to
3 a company and when a company pays its supplier for the good or service. During the
4 expense lead time period, cash received from customers may temporarily exceed a
5 company's payments to its suppliers for goods or services, and the excess may be used to
6 repay investor-provided funds. The net difference between the revenue lag and expense
7 lead denotes a company's cash working capital requirement.

8 **Q. WHAT TIME PERIOD DOES YOUR LEAD-LAG STUDY ENCOMPASS?**

9 A. The lead-lag study in this case analyzed the revenues and the associated cost of O&M and
10 Taxes during the 12 months ended December 31, 2017 to derive the appropriate net lag
11 (lead) days. While the lead and lag days were calculated from December 31, 2017 results,
12 the expenses that they were applied to are for the Company's FTY, FPY and FPFTY
13 periods.

14 **Q. WERE THE NET LAG DAYS, DEVELOPED FROM A LEAD-LAG STUDY OF**
15 **REVENUES, O&M AND TAXES, THAT YOU ESTABLISHED FOR THE**
16 **COMPANY PREPARED USING SIMILAR METHODS AND TECHNIQUES?**

17 A. Yes. The net lag days were calculated using the same methods and techniques within a
18 lead-lag study. Other than differences in dollar weightings, the components of the revenue
19 lag days are the same for O&M and Taxes since they have the same service and billing
20 period and the same accounts receivable account.

21 Similarly, other than differences in dollar weightings between each expense lead
22 account, the O&M and Taxes expense lead days are generally similar since they are
23 processed from the same accounts payable system and were therefore analyzed
24 collectively.

1 **Q. WHAT DATA SET DID YOU UTILIZE IN YOUR LEAD-LAG STUDIES?**

2 A. The lead-lag study reflects information provided by the Company. Specifically, Gannett
3 Fleming requested representative data sets from SWPA after developing an understanding
4 of the Company's collections, payment policies, procedures and expense line items details.
5 Once the requested raw data had been provided, data validation was performed by
6 comparing an actual invoice or a bill with data from the SWPA's systems to ensure
7 accuracy.

8 The revenue lag data set was based on an accounts receivable analysis of the
9 beginning balance, the monthly charges to this balance as bills were processed and mailed,
10 and the daily receipts for 365 days of the year during the 12 months ended December 31,
11 2017. The expense lead data set was based on information generated from the Company's
12 central accounts payable system. The expense lead data sets for the 12 months ended
13 December 31, 2017 were analyzed to develop the service beginning and ending dates, the
14 amount purchased, and the date of payment.

15 **VI. RESULTS OF THE LEAD-LAG STUDY**

16 **Q. WHAT ARE THE RESULTS OF THE LEAD-LAG STUDY?**

17 A. Schedule 1 sets forth the results of the lead-lag study. Specially, Schedule 1 details the net
18 lag days required to finance the recovery of SWPA's O&M and Taxes expense line items.
19 The net lag day calculations use revenue lag days and their respective expense lead days to
20 determine the appropriate net lag day which was multiplied by the average O&M and Taxes
21 expense per day (expenses / 365 days) line item.

22 The net lag days required to finance the recovery of the O&M and Taxes expenses
23 are derived by subtracting the Company's O&M and Taxes expense lead days (developed
24 on Schedules 3 through 27) from the Company's revenue lag days (developed on Schedule

1 2).

2 **Q. PLEASE DESCRIBE THE DEVELOPMENT OF NET LAG DAYS SHOWN ON**
3 **SCHEDULE 2.**

4 A. The net lag days requirements are based on the net difference between the dollar weighted
5 revenue requirement lag days and the dollar weighted O&M and Taxes cost of service lead
6 days. The weighted lag days for the receipt of the revenue requirement is developed on
7 Schedule 2. The weighted lead days for the payments of the Company's O&M and Taxes
8 cost of service is shown on Schedule 1 and the information supporting Schedule 1 is
9 developed on Schedule 3 through Schedule 27.

10 For example, the 19.9 net lag days shown on Schedule 1 required to finance the
11 recovery of the labor costs is derived by subtracting the Company's labor costs 13.4 lead
12 days (developed on Schedule 3) from the Company's revenue 33.3 lag days (developed on
13 Schedule 2) to produce the 19.9 net lag days for labor expense. Based on SWPA's 19.9
14 net lag days for labor expense, the Company requires a working capital component equal
15 to 5.4% ($19.9 \text{ days} \div 365 \text{ days}$) of the Company's labor costs to finance the recovery of the
16 labor costs.

17 **Q. PLEASE EXPLAIN THE PROCEDURES USED TO DETERMINE THE**
18 **REVENUE LAG.**

19 A. Schedule 2 of the exhibit summarizes the development of the 33.3 lag days for the
20 Company's revenue requirement. The lag days for revenue requirement are comprised of:
21 service period lag; billing lag; and collection lag.

1 **Q. PLEASE EXPLAIN THE PROCEDURES USED TO DETERMINE THE SERVICE**
2 **PERIOD LAG DAYS AND BILLING LAG DAYS FOR THE REVENUE**
3 **REQUIREMENT.**

4 A. The service period lag is the average time between actual meter readings of 30.2 days based
5 on monthly billing. The average time between meter readings, 30.2 days, is divided by
6 two to produce a midpoint, or service period lag of 15.1 days. A mid-point is used because
7 it is assumed service is provided evenly over the service period.

8 The billing lag is the time from the meter reading date to the date of the customer
9 billing date. The customer billing date, or the mailing date, is the day when the total billing
10 amount for a cycle is recorded to accounts receivable. The bills are recorded to accounts
11 receivable virtually the same day meters are read.² Adding the service period lag to the
12 billing lag produces a combined 15.1 day service period and billing lag (15.1 days + 0.0
13 days = 15.1 days).

14 **Q. PLEASE DESCRIBE THE PROCEDURE USED TO CALCULATE THE**
15 **COLLECTION LAG PORTION OF THE REVENUE LAG.**

16 A. The collection lag is the average number of days from the date the bills posted to accounts
17 receivables to the date payments are received. This was determined by dividing the average
18 monthly accounts receivable balance during the test year by the test year's average daily
19 billed revenue. This results in an average collection lag of 18.2 days for the Company as
20 shown on Schedule 2.

21 **Q. PLEASE SUMMARIZE THE TOTAL REVENUE LAG.**

22 A. The total revenue lag of 33.3 lag days for SWPA is shown on Schedule 2 and includes a

² Only about 0.05% of bills are not posted to accounts receivable on the same day meters are read. This results in the actual billing lag being only 0.0024 days.

1 15.1-day service period and billing lag and a collection lag of 18.2 days.

2 **Q. PLEASE EXPLAIN THE CALCULATION OF LEAD DAYS FOR THE O&M AND**
3 **TAXES EXPENSES SHOWN ON SCHEDULE 1.**

4 A. The lead days for O&M and Taxes expenses shown Schedule 1 are comprised of three
5 major sub-accounts including: O&M expenses; taxes other than income taxes; and income
6 taxes. For the cost of service expense items shown, the lead days were calculated for each
7 invoice or account based on the midpoints of the service periods to the dates the Company
8 paid the invoices or accounts based on varying levels of sampling of data.³

9 **Q. HOW WERE THE LEAD DAYS DETERMINED FOR THE OPERATING**
10 **EXPENSES SUB ACCOUNT LINE ITEMS SHOWN ON SCHEDULE 1?**

11 A. For the O&M expenses sub account line items shown, the lead days were determined for
12 each invoice or account sampled based on the midpoints of the service periods to the dates
13 the Company paid the invoices or accounts based on varying levels of sampling of data.

14 For example, the weighted average lead days for labor expense equal 13.4 days (see
15 Schedule 3). The lead days for labor expense were calculated for each invoice examined
16 based on the midpoints of the service periods to the dates the Company paid the invoices.
17 In total, 97% of the labor expense was sampled. Similar analyses were conducted for
18 employee group health & life lead days (see Schedule 4), employee pension benefits lead
19 days (see Schedule 5), purchased water lead days (see Schedule 6), purchased power lead
20 days (see Schedule 7), fuel for power production lead days (see Schedule 8), chemicals
21 lead days (see Schedule 9), materials and supplies lead days (see Schedule 10),
22 management and service fees lead days (see Schedule 11), lab testing fees lead days (see

³ As was the case with the revenue service period, a mid-point is used for the service lead because it is assumed service is provided evenly over the service period.

1 Schedule 12), outside contractors lead days (see Schedule 13), outside professional services
2 lead days (see Schedule 14), rental - building/real property lead days (see Schedule 15),
3 rental of equipment lead days (see Schedule 16), transportation expense lead days (see
4 Schedule 17), property & general liability insurance lead days (see Schedule 18), worker
5 compensation lead days (see Schedule 19), regulatory commission expense lead days (see
6 Schedule 20), office expense and utilities lead days (see Schedule 21), postage and air
7 freight expense lead days (see Schedule 22), and other O&M lead days (see Schedule 23).

8 **Q. HOW WERE THE LEAD DAYS DETERMINED FOR THE TAXES OTHER**
9 **THAN INCOME SUB-ACCOUNT AND INCOME TAXES SUB-ACCOUNT LINE**
10 **ITEMS SHOWN ON SCHEDULE 1?**

11 A. For most of the taxes other than income taxes sub-account and income taxes sub-account
12 line items shown, the lead days were calculated based on the midpoint of the tax liability
13 period to the payment date, weighted by the actual amount paid. The exception to this was
14 income taxes, where the lead days were calculated based on the midpoint of the tax period
15 to the payment date, weighted by the percent of the payment required. The taxes other than
16 income taxes and income taxes sub-account line sub-accounts are shown on Schedule 24
17 through Schedule 27. These taxes include real estate tax lead days (see Schedule 24),
18 payroll tax lead days (see Schedule 25), federal income taxes lead days (see Schedule 26),
19 and state income taxes lead days (see Schedule 27).

20 **Q. PLEASE SUMMARIZE SWPA'S CASH WORKING CAPITAL**
21 **REQUIREMENTS.**

22 A. Schedule 1 shows the results of the lead-lag study. As shown on Schedule 1, the
23 Company's working capital for FTY is \$821,760. The cash working capital requirement
24 for FPY is \$858,401 and the cash working capital requirement for FPPTY is \$863,746.

1 **VII. CONCLUSION**

2 **Q. DOES THIS CONCLUDE YOUR DIRECT TESTIMONY?**

3 **A.** Yes, it does.

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APPENDIX A

Professional Qualifications of
Harold Walker, III
Manager, Financial Studies
Gannett Fleming Valuation and Rate Consultants, LLC.

EDUCATION

Mr. Walker graduated from Pennsylvania State University in 1984 with a Bachelor of Science Degree in Finance. His studies concentrated on securities analysis and portfolio management with an emphasis on economics and quantitative business analysis. He has also completed the regulation and the rate-making process courses presented by the College of Business Administration and Economics Center for Public Utilities at New Mexico State University. Additionally, he has attended programs presented by The Institute of Chartered Financial Analysts (CFA).

Mr. Walker was awarded the professional designation "Certified Rate of Return Analyst" (CRRA) by the Society of Utility and Regulatory Financial Analysts. This designation is based upon education, experience and the successful completion of a comprehensive examination. He is also a member of the Society of Utility and Regulatory Financial Analysts (SURFA) and has attended numerous financial forums sponsored by the Society. The SURFA forums are recognized by the Association for Investment Management and Research (AIMR) and the National Association of State Boards of Accountancy for continuing education credits.

Mr. Walker is also a licensed Municipal Advisor Representative (Series 50) by Municipal Securities Rulemaking Board (MSRB) and Financial Industry Regulatory Authority (FINRA).

BUSINESS EXPERIENCE

Prior to joining Gannett Fleming Valuation and Rate Consultants, LLC., Mr. Walker was employed by AUS Consultants - Utility Services. He held various positions during his eleven years with AUS, concluding his employment there as a Vice President. His duties included providing and supervising financial and economic studies on behalf of investor owned and municipally owned water, waste water, electric, natural gas distribution and transmission, oil pipeline and telephone utilities as well as resource recovery companies.

In 1996, Mr. Walker joined Gannett Fleming Valuation and Rate Consultants, LLC. In his capacity as Manager, Financial Studies and for the past twenty years, he has continuously studied rates of return requirements for regulated firms. In this regard, he supervised the preparation of rate of return studies in connection with his testimony and in the past, for other individuals. He also assisted and/or developed dividend policy studies, nuclear prudence studies, calculated fixed charge rates for avoided costs involving cogeneration projects, financial decision studies for capital budgeting purposes and developed financial models for determining future capital requirements and the effect of those requirements on investors and ratepayers, valued utility property and common stock for acquisition and divestiture, and assisted in the private placement of fixed capital securities for public utilities.

Head, Gannett Fleming GASB 34 Task Force responsible for developing Governmental Accounting Standards Board (GASB) 34 services, and educating Gannett Fleming personnel and Gannett Fleming

clients on GASB 34 and how it may affect them. The GASB 34 related services include inventory of assets, valuation of assets, salvage estimation, annual depreciation rate determination, estimation of depreciation reserve, asset service life determination, asset condition assessment, condition assessment documentation, maintenance estimate for asset preservation, establishment of condition level index, geographic information system (GIS) and data management services, management discussion and analysis (MD&A) reporting, required supplemental information (RSI) reporting, auditor interface, and GASB 34 compliance review.

Mr. Walker was also the Publisher of C.A. Turner Utility Reports from 1988 to 1996. C.A. Turner Utility Reports is a financial publication which provides financial data and related ratios and forecasts covering the utility industry. From 1993 to 1994, he became a contributing author for the Fortnightly, a utility trade journal. His column was the Financial News column and focused mainly on the natural gas industry.

In 2004, Mr. Walker was elected to serve on the Board of Directors of SURFA. Previously, he served as an ex officio director and advisor to SURFA's then President. In 2000, Mr. Walker was elected President of SURFA for the 2001-2002 term. Prior to that, he was elected to serve on the Board of Directors of SURFA during the period 1997-1998 and 1999-2000. Currently, he also serves on the Pennsylvania Municipal Authorities Association, Electric Deregulation Committee.

EXPERT TESTIMONY

Mr. Walker has submitted testimony or been deposed on various topics before regulatory commissions and courts in 21 states including: Arizona, California, Colorado, Connecticut, Delaware, Illinois, Indiana, Kentucky, Maryland, Michigan, Missouri, New Hampshire, New Jersey, New York, North Carolina, Oklahoma, Pennsylvania, Rhode Island, Vermont, Virginia, and West Virginia. His testimonies covered various subjects including: fair market value, the taking of natural resources, appropriate capital structure and fixed capital cost rates, depreciation, fair rate of return, purchased water adjustments, synchronization of interest charges for income tax purposes, valuation, cash working capital, lead-lag studies, financial analyses of investment alternatives, and fair value. The following tabulation provides a listing of the electric power, natural gas distribution, telephone, wastewater, and water service utility cases in which he has been involved as a witness. Additionally, he has been involved in a number of rate proceedings involving small public utilities which were resolved by Option Orders and therefore, are not listed below.

<u>Client</u>	<u>Docket No.</u>
Alpena Power Company	U-10020
Armstrong Telephone Company - Northern Division	92-0884-T-42T
Armstrong Telephone Company - Northern Division	95-0571-T-42T
Artesian Water Company, Inc.	90 10
Artesian Water Company, Inc.	06 158
Aqua Illinois Consolidated Water Divisions and Consolidated Sewer Divisions	11-0436
Aqua Illinois Hawthorn Woods Wastewater Division	07 0620/07 0621/08 0067

Aqua Illinois Hawthorn Woods Water Division	07 0620/07 0621/08 0067
Aqua Illinois Kankakee Water Division	10-0194
Aqua Illinois Kankakee Water Division	14-0419
Aqua Illinois Vermilion Division	07 0620/07 0621/08 0067
Aqua Illinois Willowbrook Wastewater Division	07 0620/07 0621/08 0067
Aqua Illinois Willowbrook Water Division	07 0620/07 0621/08 0067
Aqua Pennsylvania Wastewater Inc	A-2016-2580061
Aqua Pennsylvania Wastewater Inc	A-2017-2605434
Aqua Virginia - Alpha Water Corporation	Pue-2009-00059
Aqua Virginia - Blue Ridge Utility Company, Inc.	Pue-2009-00059
Aqua Virginia - Caroline Utilities, Inc. (Wastewater)	Pue-2009-00059
Aqua Virginia - Caroline Utilities, Inc. (Water)	Pue-2009-00059
Aqua Virginia - Earlysville Forest Water Company	Pue-2009-00059
Aqua Virginia - Heritage Homes of Virginia	Pue-2009-00059
Aqua Virginia - Indian River Water Company	Pue-2009-00059
Aqua Virginia - James River Service Corp.	Pue-2009-00059
Aqua Virginia - Lake Holiday Utilities, Inc. (Wastewater)	Pue-2009-00059
Aqua Virginia - Lake Holiday Utilities, Inc. (Water)	Pue-2009-00059
Aqua Virginia - Lake Monticello Services Co. (Wastewater)	Pue-2009-00059
Aqua Virginia - Lake Monticello Services Co. (Water)	Pue-2009-00059
Aqua Virginia - Lake Shawnee	Pue-2009-00059
Aqua Virginia - Land'or Utility Company (Wastewater)	Pue-2009-00059
Aqua Virginia - Land'or Utility Company (Water)	Pue-2009-00059
Aqua Virginia - Mountainview Water Company, Inc.	Pue-2009-00059
Aqua Virginia - Powhatan Water Works, Inc.	Pue-2009-00059
Aqua Virginia - Rainbow Forest Water Corporation	Pue-2009-00059
Aqua Virginia - Shawnee Land	Pue-2009-00059
Aqua Virginia - Sydnor Water Corporation	Pue-2009-00059
Aqua Virginia - Water Distributors, Inc.	Pue-2009-00059
Borough of Hanover	R-2009-2106908
Borough of Hanover	R-2012-2311725
Borough of Hanover	R-2014-242830
Chaparral City Water Company	W 02113a 04 0616
California-American Water Company	CIVCV156413

Connecticut-American Water Company	99-08-32
Connecticut Water Company	06 07 08
Citizens Utilities Company	
Colorado Gas Division	-
Citizens Utilities Company	
Vermont Electric Division	5426
Citizens Utilities Home Water Company	R 901664
Citizens Utilities Water Company	
of Pennsylvania	R 901663
City of Bethlehem - Bureau of Water	R-00984375
City of Bethlehem - Bureau of Water	R 00072492
City of Bethlehem - Bureau of Water	R-2013-2390244
City of Dubois – Bureau of Water	R-2013-2350509
City of Dubois – Bureau of Water	R-2016-2554150
City of Lancaster Sewer Fund	R-00005109
City of Lancaster Sewer Fund	R-00049862
City of Lancaster Sewer Fund	R-2012-2310366
City of Lancaster Water Fund	R-00984567
City of Lancaster Water Fund	R-00016114
City of Lancaster Water Fund	R 00051167
City of Lancaster Water Fund	R-2010-2179103
City of Lancaster Water Fund	R-2014-2418872
Consumers Pennsylvania Water Company	
Roaring Creek Division	R-00973869
Consumers Pennsylvania Water Company	
Shenango Valley Division	R-00973972
Country Knolls Water Works, Inc.	90 W 0458
East Resources, Inc. - West Virginia Utility	06 0445 G 42T
Elizabethtown Water Company	WR06030257
Hampton Water Works Company	DW 99-057
Illinois American Water Company	16-0093
Indian Rock Water Company	R-911971
Indiana Natural Gas Corporation	38891
Jamaica Water Supply Company	-
Kentucky American Water Company, Inc.	2007 00134
Middlesex Water Company	WR 89030266J
Missouri-American Water Company	WR 2000-281

Missouri-American Water Company	SR 2000-282
Mount Holly Water Company	WR06030257
New Jersey American Water Company	WR 89080702J
New Jersey American Water Company	WR 90090950J
New Jersey American Water Company	WR 03070511
New Jersey American Water Company	WR-06030257
New Jersey American Water Company	WR08010020
New Jersey American Water Company	WR10040260
New Jersey American Water Company	WR11070460
New Jersey American Water Company	WR15010035
New Jersey American Water Company	WR17090985
Newtown Artesian Water Company	R-911977
Newtown Artesian Water Company	R-00943157
Newtown Artesian Water Company	R-2009-2117550
Newtown Artesian Water Company	R-2011-2230259
Newtown Artesian Water Company	R-2017-2624240
North Maine Utilities	14-0396
Northern Indiana Fuel & Light Company	38770
Oklahoma Natural Gas Company	PUD-940000477
Pennichuck Water Works, Inc.	DW 04 048
Pennichuck Water Works, Inc.	DW 06 073
Pennichuck Water Works, Inc.	DW 08 073
Pennsylvania Gas & Water Company (Gas)	R-891261
Pennsylvania Gas & Water Co. (Water)	R 901726
Pennsylvania Gas & Water Co. (Water)	R-911966
Pennsylvania Gas & Water Co. (Water)	R-22404
Pennsylvania Gas & Water Co. (Water)	R-00922482
Pennsylvania Gas & Water Co. (Water)	R-00932667
Public Service Company of North Carolina, Inc.	G-5, Sub 565
Presque Isle Harbor Water Company	U-9702
St. Louis County Water Company	WR-2000-844
Suez Water Owego-Nichols, Inc.	17-W-0528
Town of North East Water Fund	9190
United Water New Rochelle	W-95-W-1168
United Water Toms River	WR-95050219
Valley Water Systems, Inc.	06 10 07
West Virginia-American Water Company	15-0676-W-42T

West Virginia-American Water Company	15-0675-S-42T
Wilmington Suburban Water Corporation	94-149
York Water Company	R-901813
York Water Company	R-922168
York Water Company	R-943053
York Water Company	R-963619
York Water Company	R-994605
York Water Company	R-00016236

**SUEZ WATER PENNSYLVANIA INC.
HARRISBURG, PENNSYLVANIA**

CASH WORKING CAPITAL

EXHIBIT

TO ACCOMPANY THE
DIRECT TESTIMONY

APRIL 2018

Prepared by:
GANNETT FLEMING
VALUATION AND RATE CONSULTANTS, LLC



Valley Forge, Pennsylvania

SUEZ WATER PENNSYLVANIA INC.

CASH WORKING CAPITAL REQUIREMENTS
 BASED ON A LEAD-LAG STUDY
FOR THE TWELVE MONTHS ENDING DECEMBER 31, 2017

INDEX TO SCHEDULES

Schedules	Schedule Subject
Schedule 1	Summary of Cash Working Capital Requirement
Schedule 2	Calculation of Total Revenue Lag Days
Schedule 3	Labor Expense Lead Days
Schedule 4	Employee Group Health & Life Lead Days
Schedule 5	Employee Pension Benefits Lead Days
Schedule 6	Purchased Water Lead Days
Schedule 7	Purchased Power Lead Days
Schedule 8	Fuel for Power Production Lead Days
Schedule 9	Chemicals Lead Days
Schedule 10	Materials and Supplies Lead Days
Schedule 11	Management and Service Fees Lead Days
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Schedule 13	Outside Contractors Lead Days
Schedule 14	Outside Professional Services Lead Days
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Schedule 16	Rental of Equipment Lead Days
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Schedule 22	Postage and Air Freight Expense Lead Days
Schedule 23	Other O&M Lead Days
Schedule 24	Real Estate Tax Lead Days
Schedule 25	Payroll Tax Lead Days
Schedule 26	Federal Income Taxes Lead Days
Schedule 27	State Income Taxes Lead Days

SUEZ WATER PENNSYLVANIA INC.
SUMMARY OF CASH WORKING CAPITAL REQUIREMENTS
BASED ON LEAD-LAG STUDY FOR THE TWELVE MONTHS ENDING DECEMBER 31, 2017

Utility Operating Expenses	Revenue Days	Expense Days	Net (Lead) Lag Days	Expense Claim 12-Months Ending 12/31/2017	12-Months Ending 12/31/2017 CWC	Expense Claim Future Test Year 12/31/2018	Future Test Year 12/31/2018 CWC	Expense Claim Fully Projected Year Under Present Rates 12/31/2019	Fully Projected Year Under Present Rates CWC	Expense Claim Fully Projected Future Test Year Under Proposed Rates 12/31/2019	Fully Projected Future Test Year Under Proposed Rates CWC
Labor Expense	33.3	13.4	19.9	\$ 4,579,937	\$ 249,701	\$ 5,311,453	\$ 289,583	\$ 5,458,942	\$ 297,625	\$ 5,458,942	\$ 297,625
Employee Group Health & Life	33.3	12.7	20.6	1,323,689	74,707	1,407,156	79,418	1,439,521	81,244	1,439,521	81,244
Employee Pension Benefits	33.3	57.4	(24.1)	1,425,022	(94,091)	1,409,589	(93,071)	1,442,010	(95,212)	1,442,010	(95,212)
Purchased Water	33.3	15.4	17.9	68,621	3,365	76,176	3,736	182,928	8,971	182,928	8,971
Purchased Power	33.3	27.0	6.3	1,242,836	21,452	1,535,374	26,501	1,570,688	27,111	1,570,688	27,111
Fuel for Power Production	33.3	36.7	(3.4)	184,165	(1,716)	23,163	(216)	23,696	(221)	23,696	(221)
Chemicals	33.3	25.1	8.2	540,682	12,147	586,048	13,166	599,527	13,469	599,527	13,469
Materials and Supplies	33.3	10.5	22.8	254,476	15,896	277,066	17,307	283,439	17,705	283,439	17,705
Management and Service Fees	33.3	14.7	18.6	4,921,757	250,807	5,289,281	269,536	5,359,497	273,114	5,359,497	273,114
Lab Testing Fees	33.3	15.5	17.8	114,698	5,594	81,888	3,993	83,542	4,074	83,542	4,074
Outside Contractors	33.3	28.7	4.6	748,644	9,435	979,755	12,348	1,147,114	14,457	1,147,114	14,457
Outside Professional Services	33.3	49.7	(16.4)	64,321	(2,890)	66,660	(2,995)	68,193	(3,064)	68,193	(3,064)
Rental - Building/Real Property	33.3	(14.7)	48.0	60,330	7,934	60,476	7,953	60,476	7,953	60,476	7,953
Rental of Equipment	33.3	(5.1)	38.4	49,175	5,173	50,220	5,283	51,375	5,405	51,375	5,405
Transportation Expense	33.3	31.0	2.3	407,033	2,565	463,897	2,923	560,322	3,531	560,322	3,531
Prop& Gen Liab. Insurance	33.3	(59.6)	92.9	4,732	1,204	4,832	1,230	4,935	1,256	4,935	1,256
Worker Compensation	33.3	13.7	19.6	102,384	5,498	108,228	5,812	110,717	5,945	110,717	5,945
Regulatory Commission Expense	33.3	(77.0)	110.3	198,665	60,035	219,880	66,446	238,664	72,122	270,077	81,615
Office Expense and Utilities	33.3	4.0	29.3	446,337	35,829	419,541	33,678	540,894	43,420	540,894	43,420
Postage and Air Freight Expense	33.3	30.1	3.2	354,308	3,106	358,563	3,144	366,358	3,212	366,358	3,212
Other O&M	33.3	13.8	19.5	143,806	7,683	199,353	10,650	203,938	10,895	203,938	10,895
Real Estate Tax	33.3	(26.9)	60.2	270,553	44,623	311,025	51,298	318,178	52,478	318,178	52,478
Payroll	33.3	18.6	14.7	560,626	22,579	618,438	24,907	650,213	26,187	650,213	26,187
Federal Income Taxes	33.3	37.0	(3.7)	5,168,780	(52,396)	2,420,415	(24,536)	2,645,730	(26,820)	3,814,409	(38,667)
State Income Taxes	33.3	28.8	4.6	1,663,801	20,741	1,096,254	13,666	1,086,476	13,544	1,704,138	21,243
Total				\$ 708,981		\$ 821,760		\$ 858,401		\$ 863,746	

SUEZ WATER PENNSYLVANIA INC.
CALCULATION OF TOTAL REVENUE LAG DAYS
BASED ON LEAD-LAG STUDY FOR THE TWELVE MONTHS ENDING DECEMBER 31, 2017

Period	Billing Type	Service & Billing Lag	Revenue Billed	Weighted Days	Days/Mo	Average Billing	Adjusted Average A/R Balance	Collection Lag	Weighted Collection Lag	Total Revenue Lag
(a)	(b)	(c)	(d)	(e)	(g)	(h)	(i)	(j)	(k)	(l)
Jan-17	Monthly	15.1	\$3,600,933	1.2	31	\$116,159	\$2,371,456	20.42	1.8	
Feb-17	Monthly	15.1	3,675,146	1.2	28	\$131,255	2,321,606	17.69	1.5	
Mar-17	Monthly	15.1	3,475,483	1.1	31	\$112,112	2,119,542	18.91	1.5	
Apr-17	Monthly	15.1	3,567,165	1.2	30	\$118,905	2,120,226	17.83	1.4	
May-17	Monthly	15.1	3,511,897	1.1	31	\$113,287	2,212,603	19.53	1.6	
Jun-17	Monthly	15.1	3,827,619	1.2	30	\$127,587	2,125,024	16.66	1.3	
Jul-17	Monthly	15.1	4,072,090	1.3	31	\$131,358	2,444,551	18.61	1.7	
Aug-17	Monthly	15.1	3,935,648	1.3	31	\$126,956	2,376,920	18.72	1.6	
Sep-17	Monthly	15.1	4,200,319	1.4	30	\$140,011	2,170,131	15.50	1.2	
Oct-17	Monthly	15.1	4,268,399	1.4	31	\$137,690	2,344,421	17.03	1.5	
Nov-17	Monthly	15.1	4,187,424	1.4	30	\$139,581	2,321,060	16.63	1.4	
Dec-17	Monthly	15.1	4,134,759	1.3	31	\$133,379	2,487,593	18.65	1.7	
Total			<u>\$46,456,881</u>	<u>15.1</u>			<u>\$27,415,133</u>		<u>18.2</u>	<u>33.3</u>

Average Number Of Days Covered In A Bill	30.225
Divided By	<u>2</u>
Mid-point of Service Period Based On Monthly Billing	15.100
Average Billing Lag of the A/R Post Date From Meter Read	<u>0.0024</u>
Total Service Period & Billing Lag	<u><u>15.102</u></u>

2017 CS DATA

Total bills 682,392

Estimated 329 were held for 5 days.

		Days Between Read To Posting		
682,063	x	0 days		0
329	x	5 days		<u>1,645</u>
				<u>1,645</u> Weighted days

Weighted days 1,645

Total bills 682,392Average Billing Lag of the
A/R Post Date From Meter
Read 0.0024

SUEZ WATER PENNSYLVANIA INC.
CALCULATION OF LABOR EXPENSE LEAD DAYS
BASED ON LEAD-LAG STUDY FOR THE TWELVE MONTHS ENDING DECEMBER 31, 2017

<u>Month of Payment</u> (1)	<u>(Lead)/ Lag Days</u> (2)	<u>Amount</u> (3)	<u>Weighted Amount</u> (4)
January-17	13.5	\$434,478.00	\$5,865,453.00
February-17	13.5	338,572.00	4,570,722.00
March-17	13.5	482,655.00	6,515,842.50
April-17	13.0	326,528.00	4,247,540.00
May-17	13.5	349,278.00	4,715,253.00
June-17	13.5	336,341.00	4,540,603.50
July-17	13.5	333,665.00	4,504,477.50
August-17	13.5	347,048.00	4,685,148.00
September-17	13.5	509,419.00	6,877,156.50
October-17	13.5	331,435.00	4,474,372.50
November-17	13.0	332,773.00	4,326,941.50
December-17	13.5	338,571.96	4,570,721.46
Total Labor Expense Lead Days	<u>13.4</u>	<u>\$4,460,763.96</u>	<u>\$59,894,231.46</u>

SUEZ WATER PENNSYLVANIA INC.
CALCULATION OF EMPLOYEE PENSION BENEFITS LEAD DAYS
BASED ON LEAD-LAG STUDY FOR THE TWELVE MONTHS ENDING DECEMBER 31, 2017

Month of Payment <u>(1)</u>	(Lead)/ Lag Days <u>(2)</u>	Amount <u>(3)</u>	Weighted Amount <u>(4)</u>
January-17	58.5	\$272,296.00	\$15,929,316.00
February-17	0.0	0.00	0.00
March-17	0.0	0.00	0.00
April-17	57.5	139,350.00	8,012,625.00
May-17	0.0	0.00	0.00
June-17	0.0	0.00	0.00
July-17	55.0	139,350.00	7,664,250.00
August-17	0.0	0.00	0.00
September-17	0.0	0.00	0.00
October-17	57.5	169,606.00	9,752,345.00
November-17	0.0	0.00	0.00
December-17	0.0	0.00	0.00
Total Employee Pension Benefits Lead Days	<u>57.4</u>	<u>\$720,602.00</u>	<u>\$41,358,536.00</u>

SUEZ WATER PENNSYLVANIA INC.
CALCULATION OF EMPLOYEE GROUP HEALTH & LIFE LEAD DAYS
BASED ON LEAD-LAG STUDY FOR THE TWELVE MONTHS ENDING DECEMBER 31, 2017

<u>Month of Payment</u> (1)	<u>(Lead)/ Lag Days</u> (2)	<u>Amount</u> (3)	<u>Weighted Amount</u> (4)
January-17	0.0	\$0.00	\$0.00
February-17	14.9	200,091.84	2,983,560.31
March-17	14.1	178,006.74	2,501,114.61
April-17	11.4	167,347.25	1,912,469.37
May-17	13.6	140,292.51	1,904,091.19
June-17	11.0	123,515.18	1,360,215.27
July-17	11.8	72,180.52	854,150.15
August-17	11.9	115,655.47	1,376,880.18
September-17	12.5	113,809.88	1,422,623.50
October-17	13.7	138,229.33	1,899,014.45
November-17	13.5	136,577.65	1,843,798.28
December-17	<u>10.3</u>	<u>169,094.60</u>	<u>1,736,417.28</u>
Total Employee Group Health & Life Lead Days	<u><u>12.7</u></u>	<u><u>\$1,554,800.97</u></u>	<u><u>\$19,794,334.58</u></u>

SUEZ WATER PENNSYLVANIA INC.
CALCULATION OF PURCHASED WATER LEAD DAYS
BASED ON LEAD-LAG STUDY FOR THE TWELVE MONTHS ENDING DECEMBER 31, 2017

<u>Month of Payment</u> (1)	<u>(Lead)/ Lag Days</u> (2)	<u>Amount</u> (3)	<u>Weighted Amount</u> (4)
January-17	16.8	\$5,702.90	\$95,712.00
February-17	15.1	5,702.90	86,140.80
March-17	14.0	5,702.90	79,600.40
April-17	17.3	5,702.90	98,563.45
May-17	11.5	5,702.90	65,502.75
June-17	13.0	5,702.90	74,396.05
July-17	14.0	5,702.90	79,600.40
August-17	13.3	5,702.90	75,572.50
September-17	14.3	5,785.40	82,582.90
October-17	(15.0)	1,675.00	-25,125.00
November-17	21.2	5,702.90	120,716.90
December-17	22.8	9,834.90	224,279.40
 Total Purchased Water Lead Days	<u>15.4</u>	<u>\$68,621.40</u>	<u>\$1,057,542.55</u>

SUEZ WATER PENNSYLVANIA INC.
CALCULATION OF PURCHASED POWER LEAD DAYS
BASED ON LEAD-LAG STUDY FOR THE TWELVE MONTHS ENDING DECEMBER 31, 2017

<u>Month of Payment</u> (1)	<u>(Lead)/ Lag Days</u> (2)	<u>Amount</u> (3)	<u>Weighted Amount</u> (4)
January-17	25.5	\$119,733.42	\$3,051,228.55
February-17	25.0	101,678.54	2,538,262.72
March-17	31.5	130,087.90	4,103,784.32
April-17	27.1	114,248.85	3,093,113.29
May-17	26.1	101,176.31	2,635,881.50
June-17	28.1	146,598.68	4,121,061.43
July-17	26.0	81,953.00	2,131,444.07
August-17	26.8	143,094.31	3,840,582.84
September-17	26.3	89,155.16	2,348,884.97
October-17	26.9	101,640.16	2,734,662.38
November-17	26.6	111,940.73	2,977,009.88
December-17	26.3	145,893.54	3,829,909.43
 Total Purchased Power Lead Days	 <u>27.0</u>	 <u>\$1,387,200.60</u>	 <u>\$37,405,825.36</u>

SUEZ WATER PENNSYLVANIA INC.
CALCULATION OF FUEL FOR POWER PRODUCTION LEAD DAYS
BASED ON LEAD-LAG STUDY FOR THE TWELVE MONTHS ENDING DECEMBER 31, 2017

<u>Month of Payment</u>	<u>(Lead)/ Lag Days</u>	<u>Amount</u>	<u>Weighted Amount</u>
(1)	(2)	(3)	(4)
January-17	0.0	\$0.00	\$0.00
February-17	47.8	12,977.48	620,033.23
March-17	0.0	0.00	0.00
April-17	0.0	0.00	0.00
May-17	0.0	0.00	0.00
June-17	17.2	4,317.21	74,303.26
July-17	0.0	0.00	0.00
August-17	0.0	0.00	0.00
September-17	30.0	769.10	23,073.00
October-17	0.0	0.00	0.00
November-17	15.0	1,299.50	19,492.50
December-17	7.0	899.70	6,297.90
Total Fuel For Power Production Lead Days	<u>36.7</u>	<u>\$20,262.99</u>	<u>\$743,199.89</u>

SUEZ WATER PENNSYLVANIA INC.
 CALCULATION OF CHEMICALS LEAD DAYS
 BASED ON LEAD-LAG STUDY FOR THE TWELVE MONTHS ENDING DECEMBER 31, 2017

<u>Month of Payment</u> (1)	<u>(Lead)/ Lag Days</u> (2)	<u>Amount</u> (3)	<u>Weighted Amount</u> (4)
January-17	25.8	\$17,183.28	\$443,494.05
February-17	61.0	3,160.53	192,846.96
March-17	26.0	16,410.72	426,918.01
April-17	28.8	5,458.46	157,239.10
May-17	16.4	27,793.00	457,158.38
June-17	36.7	1,648.32	60,415.20
July-17	53.0	12,925.35	685,491.55
August-17	26.6	16,942.12	451,261.96
September-17	21.8	15,296.71	332,769.05
October-17	13.2	12,476.05	164,623.20
November-17	32.2	8,501.73	274,166.98
December-17	12.9	14,998.44	193,603.48
Total Chemicals Lead Days	<u>25.1</u>	<u>\$152,794.71</u>	<u>\$3,839,987.92</u>

SUEZ WATER PENNSYLVANIA INC.
CALCULATION OF MATERIALS AND SUPPLIES LEAD DAYS
BASED ON LEAD-LAG STUDY FOR THE TWELVE MONTHS ENDING DECEMBER 31, 2017

<u>Month of Payment</u> (1)	<u>(Lead)/ Lag Days</u> (2)	<u>Amount</u> (3)	<u>Weighted Amount</u> (4)
January-17	2.0	\$4,768.00	\$9,356.63
February-17	9.0	5,181.46	46,463.85
March-17	14.6	2,664.86	39,035.16
April-17	23.6	5,960.69	140,643.91
May-17	21.1	12,386.93	261,978.25
June-17	11.2	4,682.37	52,220.05
July-17	11.5	8,671.54	99,914.77
August-17	19.3	6,940.13	134,204.62
September-17	(3.3)	15,419.35	-51,406.95
October-17	8.3	19,890.89	165,963.61
November-17	14.3	4,969.42	70,974.78
December-17	9.8	8,924.18	87,374.34
 Total Materials And Supplies Lead Days	 10.5	 \$100,459.82	 \$1,056,723.02

SUEZ WATER PENNSYLVANIA INC.
CALCULATION OF MANAGEMENT AND SERVICE FEES LEAD DAYS
BASED ON LEAD-LAG STUDY FOR THE TWELVE MONTHS ENDING DECEMBER 31, 2017

Month of Payment <u>(1)</u>	(Lead)/ Lag Days <u>(2)</u>	Amount <u>(3)</u>	Weighted Amount <u>(4)</u>
January-17	15.0	\$412,077.27	\$6,181,159.05
February-17	13.5	373,565.17	5,043,129.80
March-17	14.9	441,249.72	6,593,861.61
April-17	14.5	378,836.24	5,493,125.48
May-17	15.0	454,535.42	6,836,319.56
June-17	14.5	394,545.55	5,720,910.48
July-17	15.0	386,076.04	5,791,140.60
August-17	15.0	373,522.30	5,602,834.50
September-17	14.5	506,687.79	7,346,972.96
October-17	15.0	410,852.62	6,162,789.30
November-17	14.5	317,470.77	4,603,284.87
December-17	15.0	472,337.74	7,085,066.10
Total Management And Service Fees Lead Days	<u>14.7</u>	<u>\$4,921,756.63</u>	<u>\$72,460,594.30</u>

SUEZ WATER PENNSYLVANIA INC.
CALCULATION OF LAB TESTING FEES LEAD DAYS
BASED ON LEAD-LAG STUDY FOR THE TWELVE MONTHS ENDING DECEMBER 31, 2017

<u>Month of Payment</u> (1)	<u>(Lead)/ Lag Days</u> (2)	<u>Amount</u> (3)	<u>Weighted Amount</u> (4)
January-17	87.1	\$15,923.25	\$1,386,226.72
February-17	4.8	4,659.74	22,422.81
March-17	9.4	10,718.38	101,175.06
April-17	6.2	7,598.88	46,956.34
May-17	2.1	7,709.90	16,383.49
June-17	3.9	15,323.45	60,309.64
July-17	5.8	18,671.68	108,386.19
August-17	3.6	8,677.31	31,618.51
September-17	6.4	18,555.07	118,121.84
October-17	2.9	9,579.22	28,055.81
November-17	5.4	4,490.75	24,439.44
December-17	8.5	7,637.10	64,670.15
Total Lab Testing Fees Lead Days	<u>15.5</u>	<u>\$129,544.73</u>	<u>\$2,008,766.00</u>

SUEZ WATER PENNSYLVANIA INC.
 CALCULATION OF OUTSIDE CONTRACTORS LEAD DAYS
 BASED ON LEAD-LAG STUDY FOR THE TWELVE MONTHS ENDING DECEMBER 31, 2017

<u>Month of Payment</u>	<u>(Lead)/ Lag Days</u>	<u>Amount</u>	<u>Weighted Amount</u>
(1)	(2)	(3)	(4)
January-17	38.3	\$69,202.33	\$2,650,523.73
February-17	25.0	11,484.75	287,275.87
March-17	26.1	43,493.42	1,136,152.30
April-17	38.9	39,747.55	1,546,389.41
May-17	37.4	194,965.99	7,290,406.29
June-17	29.5	84,079.09	2,481,562.51
July-17	21.8	67,954.50	1,482,285.58
August-17	23.5	75,865.03	1,784,279.34
September-17	36.1	49,201.67	1,777,761.49
October-17	31.9	57,613.11	1,838,442.08
November-17	28.5	53,629.60	1,528,824.79
December-17	12.1	141,585.79	1,719,443.54
Total Outside Contractors Lead Days	<u>28.7</u>	<u>\$888,822.83</u>	<u>\$25,523,346.91</u>

SUEZ WATER PENNSYLVANIA INC.
CALCULATION OF OUTSIDE PROFESSIONAL SERVICES LEAD DAYS
BASED ON LEAD-LAG STUDY FOR THE TWELVE MONTHS ENDING DECEMBER 31, 2017

<u>Month of Payment</u> (1)	<u>(Lead)/ Lag Days</u> (2)	<u>Amount</u> (3)	<u>Weighted Amount</u> (4)
January-17	76.6	\$24,465.95	\$1,873,302.83
February-17	26.3	3,020.43	79,426.16
March-17	30.4	5,326.07	162,152.04
April-17	43.9	12,049.82	528,884.99
May-17	71.6	8,214.29	587,833.62
June-17	30.5	3,561.32	108,626.32
July-17	43.9	8,069.81	354,346.05
August-17	27.9	4,070.90	113,594.53
September-17	27.1	3,598.61	97,577.19
October-17	33.3	5,721.30	190,600.31
November-17	50.5	22,966.71	1,159,279.30
December-17	28.1	10,630.64	298,608.15
Total Outside Professional Services Lead Days	<u>49.7</u>	<u>\$111,695.85</u>	<u>\$5,554,231.46</u>

SUEZ WATER PENNSYLVANIA INC.
CALCULATION OF RENTAL - BUILDING/REAL PROPERTY LEAD DAYS
BASED ON LEAD-LAG STUDY FOR THE TWELVE MONTHS ENDING DECEMBER 31, 2017

<u>Month of Payment</u>	<u>(Lead)/ Lag Days</u>	<u>Amount</u>	<u>Weighted Amount</u>
(1)	(2)	(3)	(4)
January-17	(15.0)	\$4,892.92	-\$73,393.80
February-17	(13.5)	5,039.72	-68,036.22
March-17	(15.0)	5,039.72	-75,595.80
April-17	(14.5)	5,039.72	-73,075.94
May-17	(15.0)	5,039.72	-75,595.80
June-17	(14.5)	5,039.72	-73,075.94
July-17	(15.0)	5,039.72	-75,595.80
August-17	(15.0)	5,039.72	-75,595.80
September-17	(14.5)	5,039.72	-73,075.94
October-17	(15.0)	5,039.72	-75,595.80
November-17	(14.5)	5,039.72	-73,075.94
December-17	(15.0)	5,039.72	-75,595.80
Total Rental - Building/Real Property Lead Days	<u>(14.7)</u>	<u>\$60,329.84</u>	<u>-\$887,308.58</u>

SUEZ WATER PENNSYLVANIA INC.
CALCULATION OF RENTAL OF EQUIPMENT LEAD DAYS
BASED ON LEAD-LAG STUDY FOR THE TWELVE MONTHS ENDING DECEMBER 31, 2017

Month of Payment <u>(1)</u>	(Lead)/ Lag Days <u>(2)</u>	Amount <u>(3)</u>	Weighted Amount <u>(4)</u>
January-17	8.3	\$3,240.50	\$26,813.72
February-17	(3.4)	10,925.33	-36,808.59
March-17	7.5	3,012.43	22,456.34
April-17	(4.1)	5,209.75	-21,617.46
May-17	(9.6)	7,313.30	-69,992.67
June-17	(24.7)	2,152.62	-53,166.93
July-17	(16.8)	2,926.62	-49,022.71
August-17	(7.1)	4,584.45	-32,479.31
September-17	(17.5)	2,315.46	-40,576.49
October-17	13.9	4,561.44	63,339.73
November-17	(7.5)	3,832.03	-28,653.90
December-17	<u>(29.4)</u>	<u>1,511.21</u>	<u>-44,362.16</u>
Total Rental Of Equipment Lead Days	<u>(5.1)</u>	<u>\$51,585.14</u>	<u>-\$264,070.41</u>

SUEZ WATER PENNSYLVANIA INC.
CALCULATION OF TRANSPORTATION EXPENSE LEAD DAYS
BASED ON LEAD-LAG STUDY FOR THE TWELVE MONTHS ENDING DECEMBER 31, 2017

<u>Month of Payment</u> (1)	<u>(Lead)/ Lag Days</u> (2)	<u>Amount</u> (3)	<u>Weighted Amount</u> (4)
January-17	33.6	\$47,498.35	\$1,594,965.31
February-17	32.3	63,534.68	2,049,098.52
March-17	19.3	47,821.46	922,644.51
April-17	31.9	58,385.23	1,862,351.13
May-17	35.0	51,739.49	1,809,433.23
June-17	29.1	48,333.40	1,405,157.74
July-17	38.0	44,771.59	1,699,776.83
August-17	27.8	48,314.42	1,341,424.75
September-17	31.1	52,889.73	1,644,908.37
October-17	31.4	54,775.09	1,722,502.42
November-17	32.9	51,433.04	1,690,627.13
December-17	28.9	41,215.57	1,191,828.75
Total Transportation Expense Lead Days	<u>31.0</u>	<u>\$610,712.05</u>	<u>\$18,934,718.65</u>

SUEZ WATER PENNSYLVANIA INC.
CALCULATION OF PROP& GEN LIAB. INSURANCE LEAD DAYS
BASED ON LEAD-LAG STUDY FOR THE TWELVE MONTHS ENDING DECEMBER 31, 2017

<u>Month of Payment</u>	<u>(Lead)/ Lag Days</u>	<u>Amount</u>	<u>Weighted Amount</u>
(1)	(2)	(3)	(4)
January-17	(42.5)	\$99.99	-\$4,249.58
February-17	0.0	0.00	0.00
March-17	(61.0)	3,124.99	-190,624.39
April-17	(14.2)	299.98	-4,249.67
May-17	0.0	0.00	0.00
June-17	0.0	0.00	0.00
July-17	0.0	0.00	0.00
August-17	0.0	0.00	0.00
September-17	0.0	0.00	0.00
October-17	0.0	0.00	0.00
November-17	0.0	0.00	0.00
December-17	(96.3)	299.97	-28,897.11
Total Prop& Gen Liab. Insurance Lead Days	<u>(59.6)</u>	<u>\$3,824.93</u>	<u>-\$228,020.74</u>

SUEZ WATER PENNSYLVANIA INC.
CALCULATION OF WORKER COMPENSATION LEAD DAYS
BASED ON LEAD-LAG STUDY FOR THE TWELVE MONTHS ENDING DECEMBER 31, 2017

<u>Month of Payment</u> (1)	<u>(Lead)/ Lag Days</u> (2)	<u>Amount</u> (3)	<u>Weighted Amount</u> (4)
January-17	0.0	\$0.00	\$0.00
February-17	17.0	18,068.76	307,168.92
March-17	14.3	14,826.94	211,393.11
April-17	11.5	8,101.46	93,166.79
May-17	14.0	17,048.70	238,681.80
June-17	11.5	8,881.43	102,136.45
July-17	12.0	10,713.41	128,560.92
August-17	14.0	8,725.91	122,162.74
September-17	12.5	11,456.03	143,200.38
October-17	14.0	7,157.94	100,211.16
November-17	13.5	9,011.72	121,658.22
December-17	12.0	7,033.20	84,398.40
Total Worker Compensation Lead Days	<u>13.7</u>	<u>\$121,025.50</u>	<u>\$1,652,738.88</u>

SUEZ WATER PENNSYLVANIA INC.
CALCULATION OF REGULATORY COMMISSION EXPENSE LEAD DAYS
BASED ON LEAD-LAG STUDY FOR THE TWELVE MONTHS ENDING DECEMBER 31, 2017

<u>Month of Payment</u>	<u>(Lead)/ Lag Days</u>	<u>Amount</u>	<u>Weighted Amount</u>
(1)	(2)	(3)	(4)
January-17	0.0	\$0.00	\$0.00
February-17	0.0	0.00	0.00
March-17	0.0	0.00	0.00
April-17	0.0	0.00	0.00
May-17	0.0	0.00	0.00
June-17	0.0	0.00	0.00
July-17	0.0	0.00	0.00
August-17	0.0	0.00	0.00
September-17	0.0	0.00	0.00
October-17	(77.0)	219,917.00	-16,933,609.00
November-17	0.0	0.00	0.00
December-17	0.0	0.00	0.00
Total Regulatory Commission Expense Lead Days	<u>(77.0)</u>	<u>\$219,917.00</u>	<u>-\$16,933,609.00</u>

SUEZ WATER PENNSYLVANIA INC.
CALCULATION OF OFFICE EXPENSE AND UTILITIES LEAD DAYS
BASED ON LEAD-LAG STUDY FOR THE TWELVE MONTHS ENDING DECEMBER 31, 2017

Month of Payment	(Lead)/ Lag Days	Amount	Weighted Amount
(1)	(2)	(3)	(4)
January-17	32.2	\$23,039.59	\$740,977.33
February-17	40.8	24,204.45	987,980.69
March-17	18.1	29,939.11	540,902.31
April-17	30.4	38,037.37	1,156,217.60
May-17	(82.8)	39,880.00	-3,303,961.14
June-17	(113.0)	52,606.90	-5,942,009.19
July-17	(0.5)	34,429.28	-16,679.98
August-17	21.3	20,294.23	432,893.91
September-17	18.7	21,533.98	401,871.46
October-17	30.4	35,769.21	1,085,623.64
November-17	27.0	19,328.40	521,620.55
December-17	216.3	22,446.89	4,855,104.76
Total Office Expense And Utilities Lead Days	4.0	\$361,509.41	\$1,460,541.94

SUEZ WATER PENNSYLVANIA INC.
CALCULATION OF POSTAGE AND AIR FREIGHT EXPENSE LEAD DAYS
BASED ON LEAD-LAG STUDY FOR THE TWELVE MONTHS ENDING DECEMBER 31, 2017

Month of Payment	(Lead)/ Lag Days	Amount	Weighted Amount
(1)	(2)	(3)	(4)
January-17	12.0	\$318.00	\$3,816.00
February-17	0.0	0.00	0.00
March-17	0.0	0.00	0.00
April-17	0.0	0.00	0.00
May-17	14.0	318.00	4,452.00
June-17	25.0	2,541.64	63,541.00
July-17	26.5	59.48	1,577.03
August-17	141.8	326.63	46,317.17
September-17	5.5	87.21	480.63
October-17	9.6	341.72	3,284.35
November-17	8.5	62.73	532.71
December-17	13.5	113.56	1,528.92
 Total Postage And Air Freight Expense Lead Days	 <u>30.1</u>	 <u>\$4,168.97</u>	 <u>\$125,529.81</u>

SUEZ WATER PENNSYLVANIA INC.
CALCULATION OF OTHER O&M LEAD DAYS
BASED ON LEAD-LAG STUDY FOR THE TWELVE MONTHS ENDING DECEMBER 31, 2017

<u>Month of Payment</u> (1)	<u>(Lead)/ Lag Days</u> (2)	<u>Amount</u> (3)	<u>Weighted Amount</u> (4)
January-17	1.1	\$1,316.20	\$1,494.42
February-17	5.0	5,899.20	29,219.20
March-17	115.7	2,684.28	310,543.10
April-17	19.0	12,787.00	243,410.04
May-17	7.5	5,605.40	42,181.56
June-17	2.7	1,107.03	2,989.01
July-17	0.0	0.00	0.00
August-17	6.3	2,179.72	13,825.33
September-17	17.4	1,732.62	30,188.82
October-17	3.4	18,333.22	61,787.32
November-17	13.3	5,293.23	70,510.35
December-17	7.3	3,404.00	24,688.00
Total Other O&M Lead Days	<u>13.8</u>	<u>\$60,341.90</u>	<u>\$830,837.15</u>

SUEZ WATER PENNSYLVANIA INC.
CALCULATION OF REAL ESTATE TAX LEAD DAYS
BASED ON LEAD-LAG STUDY FOR THE TWELVE MONTHS ENDING DECEMBER 31, 2017

Month of Payment <u>(1)</u>	(Lead)/ Lag Days <u>(2)</u>	Amount <u>(3)</u>	Weighted Amount <u>(4)</u>
January-17	(154.0)	\$31,797.55	-\$4,896,488.40
February-17	(20.6)	31,896.49	-657,319.13
March-17	(15.0)	31,896.65	-477,491.80
April-17	(12.3)	31,873.18	-393,608.04
May-17	(8.2)	31,873.17	-260,912.16
June-17	(3.0)	31,873.15	-96,343.55
July-17	(13.0)	32,002.68	-417,209.04
August-17	(1.0)	32,016.81	-32,016.81
September-17	(0.5)	5,016.76	-2,508.38
October-17	(1.0)	5,016.85	-5,016.85
November-17	(31.0)	5,016.74	-155,518.94
December-17	<u>(1.0)</u>	<u>5,016.75</u>	<u>-5,016.75</u>
Total Real Estate Tax Lead Days	<u>(26.9)</u>	<u>\$275,296.78</u>	<u>-\$7,399,449.85</u>

SUEZ WATER PENNSYLVANIA INC.
CALCULATION OF PAYROLL TAX LEAD DAYS
BASED ON LEAD-LAG STUDY FOR THE TWELVE MONTHS ENDING DECEMBER 31, 2017

<u>Month of Payment</u>	<u>(Lead)/ Lag Days</u>	<u>Amount</u>	<u>Weighted Amount</u>
(1)	(2)	(3)	(4)
January-17	17.3	\$48,614.91	\$842,666.22
February-17	19.0	37,930.57	721,045.15
March-17	18.5	36,232.97	670,309.95
April-17	19.0	35,775.25	679,801.70
May-17	18.5	36,869.46	682,085.01
June-17	18.9	58,493.33	1,102,958.01
July-17	18.5	37,364.88	691,250.28
August-17	18.5	38,832.07	718,393.30
September-17	19.0	38,384.39	729,360.01
October-17	18.5	37,448.40	692,795.40
November-17	18.5	55,600.64	1,028,611.84
December-17	19.0	37,919.71	720,104.04
Total Payroll Tax Lead Days	<u>18.6</u>	<u>\$499,466.58</u>	<u>\$9,279,380.87</u>

SUEZ WATER PENNSYLVANIA INC.
CALCULATION OF FEDERAL INCOME TAXES LEAD DAYS
BASED ON LEAD-LAG STUDY FOR THE TWELVE MONTHS ENDING DECEMBER 31, 2017

<u>Service Period</u>		<u>Payment</u>	<u>(Lead)/</u>	<u>Amount</u>	<u>Weighted</u>
<u>From</u>	<u>To</u>	<u>Date</u>	<u>Lag Days</u>	<u>(5)</u>	<u>Amount</u>
(1)	(2)	(3)	(4)		(6)
Federal Income Taxes					
1/1/17	12/31/17	4/17/17	(76.0)	25%	(19.0)
1/1/17	12/31/17	6/15/17	(17.0)	25%	(4.3)
1/1/17	12/31/17	9/15/17	75.0	25%	18.8
1/1/17	12/31/17	12/15/17	<u>166.0</u>	<u>25%</u>	<u>41.5</u>
Total Federal Income Taxes			<u><u>37.0</u></u>	<u><u>100%</u></u>	<u><u>37.0</u></u>

SUEZ WATER PENNSYLVANIA INC.
CALCULATION OF STATE INCOME TAXES LEAD DAYS
BASED ON LEAD-LAG STUDY FOR THE TWELVE MONTHS ENDING DECEMBER 31, 2017

<u>Service Period</u>		<u>Payment</u>	<u>(Lead)/</u>	<u>Amount</u>	<u>Weighted</u>
<u>From</u>	<u>To</u>	<u>Date</u>	<u>Lag Days</u>		<u>Amount</u>
(1)	(2)	(3)	(4)	(5)	(6)
<u>State Income Taxes</u>					
1/1/17	12/31/17	3/15/17	(109.0)	25%	(27.3)
1/1/17	12/31/17	6/15/17	(17.0)	25%	(4.3)
1/1/17	12/31/17	9/15/17	75.0	25%	18.8
1/1/17	12/31/17	12/15/17	<u>166.0</u>	<u>25%</u>	<u>41.5</u>
Total State Income Taxes			<u><u>28.8</u></u>	<u><u>100%</u></u>	<u><u>28.8</u></u>

SUEZ WATER PENNSYLVANIA, INC.
HARRISBURG, PENNSYLVANIA

CASH WORKING CAPITAL

REBUTTAL TESTIMONY
OF
HAROLD WALKER, III

AUGUST 2018

Prepared by:
GANNETT FLEMING
VALUATION AND RATE CONSULTANTS, LLC



Valley Forge, Pennsylvania

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II. SCOPE OF TESTIMONY 1

III. SUMMARY OF UPDATED WORKING CAPITAL CLAIM 2

IV. CONCLUSION..... 2

1 **I. INTRODUCTION**

2 **Q. PLEASE STATE YOUR NAME AND ADDRESS.**

3 A. My name is Harold Walker, III. My business mailing address is P. O. Box 80794, Valley
4 Forge, Pennsylvania, 19484.

5 **Q. ARE YOU THE SAME HAROLD WALKER WHO PREVIOUSLY SUBMITTED**
6 **DIRECT TESTIMONY IN THIS PROCEEDING?**

7 A. Yes.

8 **II. SCOPE OF TESTIMONY**

9 **Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY AT THIS TIME?**

10 A. The Suez Water Pennsylvania, Inc. ("SWPA" or the "Company") asked me to update my
11 testimony concerning the appropriate working capital required to finance the SWPA's
12 operating expenses (O&M and Taxes). The updated O&M and Taxes were developed by
13 Company witness Constance E. Heppenstall in her rebuttal testimony.

14 My working capital recommendation is based upon the results of a lead-lag study
15 of SWPA, that was presented in my direct testimony, applied to the updated O&M and
16 Taxes shown in Ms. Heppenstall's rebuttal. Updated Schedule 1, attached hereto, supports
17 my rebuttal testimony and shows the development of the Company's updated working capital
18 claims.

19 **Q. ARE THERE ANY AREAS OF AGREEMENT IN THE WORKING CAPITAL**
20 **TESTIMONIES PRESENTED IN THESE PROCEEDINGS?**

21 A. Yes, all parties have adopted my recommended net lag days (revenue lag days less expense
22 lead days) presented in my direct testimony. Accordingly, the only issue regarding the
23 Company's working capital is the amount of O&M and Taxes to be applied to the net lag
24 days.

1 **III. SUMMARY OF UPDATED WORKING CAPITAL CLAIM**

2 **Q. WHAT ARE THE COMPANY'S UPDATED WORKING CAPITAL CLAIMS?**

3 A. SWPA's working capital requirements are summarized on Updated Schedule 1. The
4 working capital requirement is calculated by multiplying the net lag days (revenue lag days
5 less expense lead days) by the average operating expenses per day (total operating expenses
6 / 365 days). I determine the Company's working capital through a Lead-Lag Study which
7 measured the net lag days required to finance the SWPA's operating expenses (O&M and
8 Taxes).

9 As shown on Updated Schedule 1, I determine the Company's working capital for
10 the future test year ("FTY"), the fully projected year ("FPY"), and the fully projected future
11 test year ("FPFTY"). The Company's cash working capital for FTY is \$796,293. The cash
12 working capital requirement for FPY is \$838,507 and the cash working capital requirement
13 for FPFTY is \$843,094.

14 **IV. CONCLUSION**

15 **Q. DOES THIS CONCLUDE YOUR REBUTTAL TESTIMONY?**

16 A. Yes, it does.

17
18
19



SUEZ WATER PENNSYLVANIA, INC.

SUMMARY OF CASH WORKING CAPITAL REQUIREMENTS

BASED ON LEAD-LAG STUDY FOR THE TWELVE MONTHS ENDING DECEMBER 31, 2017

Utility Operating Expenses	Revenue Days	Expense Days	Net (Lead) Lag Days	Expense Claim 12-Months Ending 12/31/2017	12-Months Ending 12/31/2017 CWC	Expense Claim Future Test Year 12/31/2018	Future Test Year 12/31/2018 CWC	Expense Claim Fully Projected Year Under 12/31/2019	Fully Projected Year Under Present Rates 12/31/2019 CWC	Expense Claim Fully Projected Future Test Year Under Proposed Rates 12/31/2019	Fully Projected Future Test Year Under Proposed Rates 12/31/2019 CWC
Labor Expense	33.3	13.4	19.9	\$ 4,579,937	\$ 249,701	\$ 5,095,561	\$ 277,813	\$ 5,419,097	\$ 295,452	\$ 5,419,097	\$ 295,452
Employee Group Health & Life	33.3	12.7	20.6	1,323,689	74,707	1,336,815	75,448	1,425,129	80,432	1,425,129	80,432
Employee Pension Benefits	33.3	57.4	(24.1)	1,425,022	(94,091)	1,409,589	(93,071)	1,442,010	(95,212)	1,442,010	(95,212)
Purchased Water	33.3	15.4	17.9	68,621	3,365	76,176	3,736	182,928	8,971	182,928	8,971
Purchased Power	33.3	27.0	6.3	1,242,836	21,452	1,411,713	24,367	1,411,713	24,367	1,411,713	24,367
Fuel for Power Production	33.3	36.7	(3.4)	184,165	(1,716)	23,163	(216)	23,696	(221)	23,696	(221)
Chemicals	33.3	25.1	8.2	540,682	12,147	586,048	13,166	599,527	13,469	599,527	13,469
Materials and Supplies	33.3	10.5	22.8	254,476	15,896	250,065	15,620	255,816	15,980	255,816	15,980
Management and Service Fees	33.3	14.7	18.6	4,921,757	250,807	5,187,320	264,340	5,219,561	265,983	5,219,561	265,983
Lab Testing Fees	33.3	15.5	17.8	114,698	5,594	81,888	3,993	83,542	4,074	83,542	4,074
Outside Contractors	33.3	28.7	4.6	748,644	9,435	979,755	12,348	1,147,114	14,457	1,147,114	14,457
Outside Professional Services	33.3	49.7	(16.4)	64,321	(2,890)	66,660	(2,995)	68,193	(3,064)	68,193	(3,064)
Rental - Building/Real Property	33.3	(14.7)	48.0	60,330	7,934	60,476	7,953	30,219	3,974	30,219	3,974
Rental of Equipment	33.3	(5.1)	38.4	49,175	5,173	50,220	5,283	51,375	5,405	51,375	5,405
Transportation Expense	33.3	31.0	2.3	407,033	2,565	463,897	2,923	560,322	3,531	560,322	3,531
Prop& Gen Liab. Insurance	33.3	(59.6)	92.9	4,732	1,204	4,832	1,230	4,935	1,256	4,935	1,256
Worker Compensation	33.3	13.7	19.6	102,384	5,498	108,228	5,812	110,717	5,945	110,717	5,945
Regulatory Commission Expense	33.3	(77.0)	110.3	198,665	60,035	219,880	66,446	235,344	71,119	262,302	79,265
Office Expense and Utilities	33.3	4.0	29.3	446,337	35,829	419,541	33,678	540,894	43,420	540,894	43,420
Postage and Air Freight Expense	33.3	30.1	3.2	354,308	3,106	358,563	3,144	366,358	3,212	366,358	3,212
Other O&M	33.3	13.8	19.5	143,806	7,683	199,353	10,650	203,938	10,895	203,938	10,895
Real Estate Tax	33.3	(26.9)	60.2	270,553	44,623	311,025	51,298	318,178	52,478	318,178	52,478
Payroll	33.3	18.6	14.7	560,626	22,579	597,949	24,082	644,779	25,968	644,779	25,968
Federal Income Taxes	33.3	37.0	(3.7)	5,168,780	(52,396)	2,558,166	(25,932)	2,722,446	(27,597)	3,725,392	(37,764)
State Income Taxes	33.3	28.8	4.6	1,663,801	20,741	1,217,505	15,177	1,140,177	14,213	1,670,247	20,821
Total					\$ 708,961		\$ 796,293		\$ 838,507		\$ 843,094

VERIFICATION

I, Dylan W. D'Ascendis, hereby state that the facts set forth above are true and correct to the best of my knowledge, information and belief and that I expect to be able to prove the same at a hearing held in this matter. I understand that the statements herein are made subject to the penalties of 18 Pa. C.S. § 4904 (relating to unsworn falsification to authorities).

Date: October 10, 2018



A handwritten signature in black ink, appearing to read "Dylan W. D'Ascendis", is written over a horizontal line.

PENNSYLVANIA PUBLIC UTILITY COMMISSION

v.

SUEZ WATER PENNSYLVANIA INC.

DOCKET NO. R-2018-3000834

Direct Testimony

of

Dylan W. D'Ascendis, CRRA, CVA

Director, ScottMadden, Inc.

Concerning SUEZ Water Pennsylvania Inc.'s

Cost of Common Equity

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1 **I. INTRODUCTION**

2 **A. Witness Identification**

3 **Q. Please state your name and business address.**

4 A. My name is Dylan W. D'Ascendis. My business address is 3000 Atrium Way, Suite
5 241, Mount Laurel, NJ 08054.

6 **Q. By whom are you employed and in what capacity?**

7 A. I am a Director at ScottMadden, Inc.

8 **B. Background and Qualifications**

9 **Q. Please summarize your professional experience and educational
10 background.**

11 A. I offer expert testimony on behalf of investor-owned utilities on rate of return issues
12 and class cost of service issues. I also assist in the preparation of rate filings,
13 including but not limited to revenue requirements and original cost and lead/lag
14 studies. I am a graduate of the University of Pennsylvania, where I received a
15 Bachelor of Arts degree in Economic History. I also hold a Master of Business
16 Administration from Rutgers University with a concentration in Finance and
17 International Business, which was conferred with high honors. I am a Certified
18 Rate of Return Analyst ("CRRA") and a Certified Valuation Analyst ("CVA"). My
19 full professional qualifications are provided in Appendix A.

1 **II. PURPOSE OF TESTIMONY**

2 **Q. What is the purpose of your testimony in this proceeding?**

3 A. The purpose of my testimony is to testify on behalf of SUEZ Water Pennsylvania
4 Inc. ("SUEZ PA" or the "Company") about the appropriate capital structure and
5 corresponding cost rates that the Company should be afforded the opportunity to
6 earn on its jurisdictional rate base.

7 **Q. Have you prepared an exhibit in support of your recommendation?**

8 A. Yes. I have prepared Exhibit No. 5, which consists of Schedules DWD-1 through
9 DWD-8.

10 **Q. What is your recommended cost of capital for SUEZ PA?**

11 A. I recommend that the Pennsylvania Public Utility Commission ("PA PUC" or the
12 "Commission") authorize the Company the opportunity to earn an overall rate of
13 return within a range of 7.76% and 8.36% based on SUEZ PA's ratemaking capital
14 structure, which consists of 45.82% long-term debt and 54.18% common equity at
15 January 31, 2018. The embedded cost of long-term debt is 4.65% and my
16 recommended range of common equity cost rates is from 10.40% to 11.50%. The
17 overall rate of return is summarized on page 1 of Schedule DWD-1 and in Table 1
18 below:

1

Table 1: Summary of Overall Rate of Return

<u>Type of Capital</u>	<u>Ratios</u>	<u>Cost Rate</u>	<u>Weighted Cost Rate</u>
Long-Term Debt	45.82%	4.65%	2.13%
Common Equity	<u>54.18%</u>	10.40%-11.50%	<u>5.63%-6.23%</u>
Total	<u>100.00%</u>		<u>7.76%-8.36%</u>

2 **III. SUMMARY**

3 **Q. Please summarize your recommended range of common equity cost rates.**

4 A. My recommended range of common equity cost rates of 10.40% to 11.50% is
5 summarized on page 2 of Schedule DWD-1. I have assessed the market-based
6 common equity cost rates of companies of relatively similar, but not necessarily
7 identical, risk to SUEZ PA. Using companies of relatively comparable risk as
8 proxies is consistent with the principles of fair rate of return established in the
9 *Hope*¹ and *Bluefield*² cases. No proxy group can be identical in risk to any single
10 company, so there must be an evaluation of relative risk between the company
11 and the proxy group to see if it is appropriate to make adjustments to the proxy
12 group's indicated rate of return.

13 My recommendation results from the application of several cost of common
14 equity models, specifically the Discounted Cash Flow ("DCF") model, the Risk
15 Premium Model ("RPM"), and the Capital Asset Pricing Model ("CAPM"), to the
16 market data of a proxy group of six water companies ("Utility Proxy Group") whose
17 selection criteria will be discussed below. In addition, I also applied the DCF, RPM,

1 ¹ *Federal Power Commission v. Hope Natural Gas Co.*, 320 U.S. 591 (1944).

2 ² *Bluefield Water Works Improvement Co. v. Public Serv. Comm'n*, 262 U.S. 679 (1922).

1 and CAPM to a proxy group of domestic, non-price regulated companies
2 comparable in total risk to the Utility Proxy Group ("Non-Price Regulated Proxy
3 Group").

4 The results derived from each are as follows:

5 **Table 2: Summary of Common Equity Cost Rate**

	Utility Proxy Group
6 Discounted Cash Flow Model	9.10%
7 Risk Premium Model	12.12
8 Capital Asset Pricing Model	11.31
9 Cost of Equity Models Applied to	
10 Comparable Risk, Non-Price	
11 Regulated Companies	<u>12.63</u>
12	
13	
14 Indicated Range of Common Equity	
15 Cost Rates Before Adjustment	10.20%-11.30%
16 Business Risk Adjustment	<u>0.20</u>
17 Recommended Range of Common	
18 Equity Cost Rates after Adjustment	<u>10.40%-11.50%</u>

19 After analyzing the indicated common equity cost rates derived by these
20 models, I conclude that a range of common equity cost rates from 10.20% to
21 11.30% for the Company is indicated before any Company-specific adjustments.
22 I then adjusted the indicated common equity cost rate upward by 0.20% to reflect
23 SUEZ PA's greater business risk based on its smaller relative size as compared
24 with the members of the Utility Proxy Group resulting in a business risk adjusted
25 range of common equity cost rates from 10.40% to 11.50% applicable to the
26 Company.

1 **IV. GENERAL PRINCIPLES**

2 **Q. What general principles have you considered in arriving at your**
3 **recommended range of common equity cost rates from 10.40% to 11.50%?**

4 A. In unregulated industries, the competition of the marketplace is the principal
5 determinant of the price of products or services. For regulated public utilities,
6 regulation must act as a substitute for marketplace competition. Assuring that the
7 utility can fulfill its obligations to the public while providing safe and reliable service
8 at all times requires a level of earnings sufficient to maintain the integrity of
9 presently invested capital. Sufficient earnings also permit the attraction of needed
10 new capital at a reasonable cost, for which the utility must compete with other firms
11 of comparable risk, consistent with the fair rate of return standards established by
12 the U.S. Supreme Court in the previously cited *Hope* and *Bluefield* cases.
13 Consequently, marketplace data must be relied on in assessing a common equity
14 cost rate appropriate for ratemaking purposes. Just as the use of the market data
15 for the proxy group adds reliability to the informed expert judgment used in arriving
16 at a recommended common equity cost rate, the use of multiple generally
17 accepted common equity cost rate models also adds reliability and accuracy when
18 arriving at a recommended common equity cost rate.

19 **A. Business Risk**

20 **Q. Please define business risk and explain why it is important to the**
21 **determination of a fair rate of return.**

22 A. Business risk is the riskiness of a company's common stock without the use of
23 debt and/or preferred capital. Examples of such general business risks faced by

1 all utilities (*i.e.*, electric, natural gas distribution, and water) include size, the quality
2 of management, the regulatory environment in which they operate, customer mix
3 and concentration of customers, service territory growth, and capital intensity. All
4 of these have a direct bearing on earnings.

5 Consistent with the basic financial principle of risk and return, business risk
6 is important to the determination of a fair rate of return because the higher the level
7 of risk, the higher the rate of return investors demand.

8 **Q. What business risks do the water and wastewater industries face in general?**

9 A. Increasingly stringent standards plus aging infrastructure necessitate additional
10 capital investment in the distribution and treatment of water, exacerbating the
11 pressure on free cash flows arising from increased capital expenditures for
12 infrastructure repair and replacement. The significant amount of capital investment
13 and, hence, high capital intensity, is a major risk factor for the water and
14 wastewater utility industry.

15 *Value Line Investment Survey* (“*Value Line*”) observes the following about
16 the water utility industry:

17 Following several decades of neglect, the nation’s water
18 infrastructure was left in terrible condition. Pipeline systems
19 were antiquated and waste facilities needed to be upgraded
20 and expanded to handle greater demand. The neglect was
21 not purposeful. It was mostly caused by regulators not
22 wanting to raise customers (*i.e.* voters) water bills, and utilities
23 not wanting to make sizable investments, in which there was
24 uncertainty regarding the what [*sic*] level of return they would
25 be granted. Fortunately, the two sides got together and
26 realized that massive amounts of funds would be required to
27 modernize the domestic water delivery systems. Though they
28 are playing catch up, most believe the industry and regulators
29 have done a decent job of addressing the issue. Fixing the

1 water infrastructure will still take many years, but the
2 commitment has been made to resolve the problem.

3 Perhaps the most important reason behind the strong
4 operation performance turned in by the group is due to the
5 overall national regulatory climate. State authorities realized
6 that the past history of keeping water rates too low came at a
7 high cost. Most public utility commissions understood that
8 they would have to work in partnership with the industry to
9 make sure that the burdensome construction programs were
10 undertaken. Since regulators literally legislate what a utility is
11 allowed to earn on its investment, their importance cannot be
12 overstated.³

13 The water and wastewater industries also experience low depreciation
14 rates. Depreciation rates are one of the principal sources of internal cash flows for
15 all utilities (through a utility's depreciation expense) and are vital to a company to
16 fund ongoing replacements and repairs of the system. Water / wastewater utilities'
17 assets have long lives, and therefore have long capital recovery periods. As such,
18 they face greater risk due to inflation, which results in a higher replacement cost
19 per dollar of net plant.

20 Substantial capital expenditures, as noted by *Value Line*, will require
21 significant financing. The three sources of financing typically used are debt, equity
22 (common and preferred), and cash flow. All three are intricately linked to the
23 opportunity to earn a sufficient rate of return as well as the ability to achieve that
24 return. Consistent with *Hope* and *Bluefield*, the return must be sufficient to
25 maintain credit quality as well as enable the attraction of necessary new capital,
26 be it debt or equity capital. If unable to raise debt or equity capital, the utility must

³ *Value Line Investment Survey*, January 12, 2018.

1 turn to either retained earnings or free cash flow,⁴ both of which are directly linked
2 to earning a sufficient rate of return. The level of free cash flow represents a
3 company's ability to meet the needs of its debt and equity holders. If either retained
4 earnings or free cash flow is inadequate, it will be nearly impossible for the utility
5 to attract the needed new capital to invest in new infrastructure to ensure quality
6 service to its customers. An insufficient rate of return can be financially devastating
7 for utilities and a public safety issue for their customers.

8 The water and wastewater utility industry's high degree of capital intensity
9 and low depreciation rates, coupled with the need for substantial infrastructure
10 capital spending, require regulatory support in the form of adequate and timely rate
11 relief, particularly a sufficient authorized return on common equity, so that the
12 industry can successfully meet the challenges it faces.

13 **B. Financial Risk**

14 **Q. Please define financial risk and explain why it is important to the**
15 **determination of a fair rate of return.**

16 **A.** Financial risk is the additional risk created by the introduction of debt and preferred
17 stock into the capital structure. The higher the proportion of debt and preferred
18 stock in the capital structure, the higher the financial risk (*i.e.* likelihood of default).
19 Therefore, consistent with the basic financial principle of risk and return, investors
20 demand a higher common equity return as compensation for bearing higher default
21 risk.

⁴ Free Cash Flow = Operating Cash Flow (funds from operations) minus Capital Expenditures.

1 **Q. Can bond and credit ratings be a proxy for the combined business and**
2 **financial risks (i.e., investment risk of an enterprise)?**

3 A. Yes, similar bond ratings/issuer credit ratings reflect, and are representative of,
4 similar combined business and financial risks (i.e., total risk) faced by bond
5 investors.⁵ Although specific business or financial risks may differ between
6 companies, the same bond/credit rating indicates that the combined risks are
7 roughly similar, albeit not necessarily equal, as the purpose of the bond/credit
8 rating process is to assess credit quality or credit risk and not common equity risk.

9 **Q. Do rating agencies reflect company size in their bond ratings?**

10 A. No. Neither S&P nor Moody's have minimum company size requirements for any
11 given rating level. This means, all else equal, a relative size analysis needs to be
12 conducted for companies with similar bond ratings.

13 **V. CAPITAL STRUCTURE**

14 **Q. What capital structure ratios do you recommend be employed in developing**
15 **an overall fair rate of return appropriate for the Company?**

16 A. I recommend the use of a ratemaking capital structure consisting of 45.82% long-
17 term debt and 54.18% common equity as shown on page 1 of Schedule DWD-1.
18 This capital structure is based on the actual capital structure of SUEZ Water
19 Resources ("SWR"), SUEZ PA's parent, at January 31, 2018.

⁵ Risk distinctions within S&P's bond rating categories are recognized by a plus or minus, i.e., within the A category, an S&P rating can be at A+, A, or A-. Similarly, risk distinctions for Moody's ratings are distinguished by numerical rating gradations, i.e., within the A category, a Moody's rating can be A1, A2 and A3.

1 **Q. How does your proposed ratemaking common equity ratio of 54.18% for**
2 **SUEZ PA compare with the total equity ratios maintained by the companies**
3 **in your Utility Proxy Group?**

4 A. My proposed ratemaking common equity ratio of 54.18% for SUEZ PA is
5 reasonable and consistent with the range of total equity ratios maintained, on
6 average, by the companies in the Utility Proxy Group on which I base my
7 recommended common equity cost rate. As shown on page 2 of Schedule DWD-
8 2, the common equity ratios of the Utility Proxy Group range from 44.12% to
9 62.25%, with a midpoint of 53.19% and an average of 54.61% in 2017.

10 In my opinion, a capital structure consisting of 45.82% long-term debt and
11 54.18% total equity is appropriate for ratemaking purposes for SUEZ PA in the
12 current proceeding because it is comparable with the average capital structure
13 ratios (based on total permanent capital) maintained by the water companies in
14 the Utility Proxy Group on whose market data I base my recommended common
15 equity cost rate.

16 **Q. What cost rate for long-term debt is most appropriate for use in a cost of**
17 **capital determination for SUEZ PA?**

18 A. A long-term debt cost rate of 4.65% is reasonable and appropriate and is based
19 on the actual long-term debt cost rate of SWR at January 31, 2018 as shown on
20 page 2 of Schedule DWD-1.

1 **VI. UTILITY PROXY GROUP SELECTION**

2 **Q. Please explain how you chose your proxy group of six water companies.**

3 A. The basis of selection for the Utility Proxy Group was to select those companies
4 which meet the following criteria:

- 5 (i) They are included in the Water Utility Group of *Value Line's Standard*
6 *Edition* (January 12, 2018);
- 7 (ii) They have 70% or greater of 2017 total operating income and 70% or
8 greater of 2017 total assets attributable to regulated water operations;
- 9 (iii) At the time of the preparation of this testimony, they had not publicly
10 announced that they were involved in any major merger or acquisition
11 activity (*i.e.*, one publicly-traded utility merging with or acquiring another);
- 12 (iv) They have not cut or omitted their common dividends during the five years
13 ending 2017 or through the time of the preparation of this testimony;
- 14 (v) They have *Value Line* and Bloomberg adjusted betas;
- 15 (vi) They have a positive *Value Line* five-year dividends per share (DPS) growth
16 rate projection; and
- 17 (vii) They have *Value Line*, Reuters, Zacks, or Yahoo! Finance consensus five-
18 year earnings per share (EPS) growth rate projections.

19 The following six companies met these criteria: American States Water Co.,
20 American Water Works Co., Inc., Aqua America, Inc., California Water Service
21 Corp., Middlesex Water Co., and York Water Co.

1 **Q. Please describe Schedule DWD-2, page 2.**

2 A. Page 2 of Schedule DWD-2 contains comparative capitalization and financial
3 statistics for the six water companies identified above for the years 2013 to 2017.

4 During the five-year period ending 2017, the historically achieved average
5 earnings rate on book common equity for the group averaged 10.68%. The
6 average common equity ratio based on total permanent capital (excluding short-
7 term debt) was 54.56%, and the average dividend payout ratio was 58.60%.

8 Total debt to earnings before interest, taxes, depreciation, and amortization
9 ("EBITDA") for the years 2013 to 2017 ranges between 3.31 and 3.56, with an
10 average of 3.45. Funds from operations to total debt range from 22.50% to
11 26.48%, with an average of 24.38%.

12 **VII. COMMON EQUITY COST RATE MODELS**

13 **Q. Are your cost of common equity models market-based models?**

14 A. Yes. The DCF model is market-based because market prices are used in
15 developing the dividend yield component of the model. The RPM is market-based
16 because the bond ratings and expected bond yields used in the application of the
17 RPM reflect the market's assessment of bond/credit risk. In addition, the use of
18 beta coefficients (β) to determine the equity risk premium reflects the market's
19 assessment of market/systematic risk since beta coefficients are derived from
20 regression analyses of market prices. The Predictive Risk Premium Model
21 ("PRPM") uses monthly market returns in addition to expectations of the risk-free
22 rate. The CAPM is market-based for many of the same reasons that the RPM is
23 market-based (*i.e.*, the use of expected bond yields and betas). Selection of the

1 comparable risk non-price regulated companies is market-based because it is
2 based on statistics which result from regression analyses of market prices and
3 reflect the market's assessment of total risk.

4 **A. Discounted Cash Flow Model**

5 **Q. What is the theoretical basis of the DCF model?**

6 A. The theory underlying the DCF model is that the present value of an expected
7 future stream of net cash flows during the investment holding period can be
8 determined by discounting those cash flows at the cost of capital, or the investors'
9 capitalization rate. DCF theory indicates that an investor buys a stock for an
10 expected total return rate which is derived from cash flows received in the form of
11 dividends plus appreciation in market price (the expected growth rate).
12 Mathematically, the dividend yield on market price plus a growth rate equals the
13 capitalization rate, *i.e.*, the total common equity return rate expected by investors.

14 **Q. Which version of the DCF model do you use?**

15 A. I use the single-stage constant growth DCF model.

16 **Q. Please describe the dividend yield you used in your application of the DCF
17 model.**

18 A. The unadjusted dividend yields are based on the proxy companies' dividends as
19 of March 29, 2018, divided by the average of closing market prices for the 60
20 trading days ending March 29, 2018.⁶

⁶ See Schedule DWD-3, page 1, column 1.

1 **Q. Please explain your adjustment to the dividend yield.**

2 A. Because dividends are paid periodically (quarterly), as opposed to continuously
3 (daily), an adjustment must be made to the dividend yield. This is often referred
4 to as the discrete, or the Gordon Periodic, version of the DCF model.

5 DCF theory calls for the use of the full growth rate, or D_1 , in calculating the
6 dividend yield component of the model. Since the various companies in the Utility
7 Proxy Group increase their quarterly dividend at various times during the year, a
8 reasonable assumption is to reflect one-half the annual dividend growth rate in the
9 dividend yield component, or $D_{1/2}$. Because the dividend should be representative
10 of the next twelve-month period, my adjustment is a conservative approach that
11 does not overstate the dividend yield. Therefore, the actual average dividend
12 yields in Column 1 on page 1 of Schedule DWD-3 have been adjusted upward to
13 reflect one-half the average projected growth rate shown in Column 6.

14 **Q. Please explain the basis of the growth rates you apply to the Utility Proxy
15 Group in your DCF model.**

16 A. Investors with more limited resources than institutional investors are likely to rely
17 on widely available financial information services, such as *Value Line*, Reuters,
18 Zacks, and Yahoo! Finance. Investors realize that analysts have significant insight
19 into the dynamics of the industries and individual companies they analyze, as well
20 as companies' abilities to effectively manage the effects of changing laws and
21 regulations and ever-changing economic and market conditions. For these
22 reasons, I use analysts' five-year forecasts of earnings per share ("EPS") growth
23 in my DCF analysis.

1 Over the long run, there can be no growth in dividends per share (“DPS”)
2 without growth in EPS. Security analysts’ earnings expectations have a more
3 significant influence on market prices than dividend expectations. Thus, the use
4 of earnings growth rates in a DCF analysis provides a better matching between
5 investors’ market price appreciation expectations and the growth rate component
6 of the DCF.

7 **Q. Please summarize the DCF model results.**

8 A. As shown on page 1 of Schedule DWD-3, the mean result of the application of the
9 single-stage DCF model is 9.12%, the median result is 9.07%, and the average of
10 the two is 9.10% for the Utility Proxy Group. In arriving at a conclusion for the
11 DCF-indicated common equity cost rate for the Utility Proxy Group, I have relied
12 on an average of the mean and the median results of the DCF. This approach
13 takes into consideration all of the proxy companies’ results while mitigating the
14 high and low outliers of those individual results.

15 **B. The Risk Premium Model**

16 **Q. Please describe the theoretical basis of the RPM.**

17 A. The RPM is based on the fundamental financial principle of risk and return, namely,
18 that investors require greater returns for bearing greater risk. The RPM recognizes
19 that common equity capital has greater investment risk than debt capital, as
20 common equity shareholders are behind debt holders in any claim on a company’s
21 assets and earnings. As a result, investors require higher returns from common
22 stocks than from an investment in bonds, to compensate them for bearing the
23 additional risk.

1 While it is possible to directly observe bond returns and yields, the investor
2 required common equity return cannot be directly determined or observed.
3 According to RPM theory, one can estimate a common equity risk premium over
4 bonds (either historically or prospectively) and use that premium to derive a cost
5 rate of common equity. The cost of common equity equals the expected cost rate
6 for long-term debt capital plus a risk premium over that cost rate to compensate
7 common shareholders for the added risk of being unsecured and last-in-line for
8 any claim on the corporation's assets and earnings in the event of a liquidation.

9 **Q. Please explain how you derived your indicated cost of common equity based**
10 **on the RPM.**

11 A. I relied on the results of the application of two risk premium methods. The first
12 method is the PRPM, while the second method is a risk premium model using a
13 total market approach.

14 **Q. Please explain the PRPM.**

15 A. The PRPM, published in the *Journal of Regulatory Economics ("JRE")*,⁷ was
16 developed from the work of Robert F. Engle, who shared the Nobel Prize in
17 Economics in 2003 "for methods of analyzing economic time series with time-
18 varying volatility ("ARCH)".⁸ Engle found that volatility changes over time and is
19 related from one period to the next, especially in financial markets. Engle
20 discovered that the volatility in prices and returns clusters over time and is

⁷ Autoregressive conditional heteroscedasticity. See "A New Approach for Estimating the Equity Risk Premium for Public Utilities", Pauline M. Ahern, Frank J. Hanley and Richard A. Michelfelder, Ph.D. *The Journal of Regulatory Economics* (December 2011), 40:261-278.

⁸ www.nobelprize.org.

1 therefore highly predictable and can be used to predict future levels of risk and risk
2 premiums.

3 The PRPM estimates the risk / return relationship directly, as the predicted
4 equity risk premium is generated by the prediction of volatility or risk. The PRPM
5 is not based on an estimate of investor behavior, but rather on the evaluation of
6 the results of that behavior (*i.e.*, the variance of historical equity risk premiums).

7 The inputs to the model are the historical returns on the common shares of
8 each company in the Utility Proxy Group minus the historical monthly yield on long-
9 term U.S. Treasury securities through March 2018. Using a generalized form of
10 ARCH, known as GARCH, I calculate each Utility Proxy Group company's
11 projected equity risk premium using Eviews[®] statistical software. When the
12 GARCH Model is applied to the historical return data, it produces a predicted
13 GARCH variance series⁹ and a GARCH coefficient¹⁰. Multiplying the predicted
14 monthly variance by the GARCH coefficient and annualizing it¹¹ produces the
15 predicted annual equity risk premium. I then add the forecasted 30-year U.S.
16 Treasury Bond yield, 3.69%¹², to each company's PRPM-derived equity risk
17 premium to arrive at an indicated cost of common equity. The 30- year Treasury
18 yield is a consensus forecast derived from the Blue Chip Financial Forecasts ("Blue
19 Chip")¹³. The mean PRPM indicated common equity cost rate for the Utility Proxy

⁹ Illustrated on Columns 1 and 2 of page 2 of Schedule DWD-4.

¹⁰ Illustrated on Column 4 of page 2 of Schedule DWD-4.

¹¹ Annualized Return = (1+Monthly Return)¹² - 1

¹² See column 6 of page 2 of Schedule DWD-4.

¹³ Blue Chip Financial Forecasts, December 1, 2017 at p. 14 and April 1, 2018, at p. 2.

1 Group is 13.52%, the median is 13.33%, and the average of the two is 13.43%.
2 Consistent with my reliance on the average of the median and mean results of the
3 DCF, I will rely on the average of the mean and median results of the Utility Proxy
4 Group PRPM to calculate a cost of common equity rate of 13.43%.

5 **Q. Please explain the total market approach RPM.**

6 A. The total market approach RPM adds a prospective public utility bond yield to an
7 average of 1) an equity risk premium that is derived from a beta-adjusted total
8 market equity risk premium, and 2) an equity risk premium based on the S&P
9 Utilities Index.

10 **Q. Please explain the basis of the expected bond yield of 5.00% applicable to**
11 **the Utility Proxy Group.**

12 A. The first step in the total market approach RPM analysis is to determine the
13 expected bond yield. Because both ratemaking and the cost of capital (including
14 common equity cost rate) are prospective in nature, a prospective yield on
15 similarly-rated long-term debt is essential. I rely on a consensus forecast of about
16 50 economists of the expected yield on Aaa-rated corporate bonds for the six
17 calendar quarters ending with the third calendar quarter of 2019 and the long-term
18 projections for 2019 to 2023 and 2024 to 2028 from Blue Chip. As shown on Line
19 No. 1 of page 3 of Schedule DWD-4, the average expected yield on Moody's Aaa-
20 rated corporate bonds is 4.66%. In order to derive an expected yield on A2 rated-
21 public utility bonds, I make an upward adjustment of 0.28%, which represents a
22 recent spread between Aaa corporate bonds and A2-rated public utility bonds, in
23 order to adjust the expected Aaa corporate bond yield to an equivalent Moody's

1 A2-rated public utility bond.¹⁴ Adding that recent 0.28% spread to the expected
2 Aaa corporate bond yield of 4.66% results in an expected A2 public utility bond of
3 4.94%.

4 Since the Utility Proxy Group's average Moody's long-term issuer rating is
5 A2/A3, another adjustment to the expected A2 public utility bond yield is needed
6 to reflect the difference in bond ratings. An upward adjustment of 0.06%, which
7 represents one-sixth of a recent spread between A2 and A3 public utility bond
8 yields, is necessary to make the A2 prospective bond yield applicable to an A2/A3
9 public utility bond.¹⁵ Adding the 0.06% to the 4.94% prospective A2 public utility
10 bond yield results in a 5.00% expected bond yield for the Utility Proxy Group.

11 **Q. Please explain the derivation of the beta-derived equity risk premium.**

12 A. The components of the beta derived risk premium model are 1) an expected
13 market equity risk premium over corporate bonds and 2) the beta coefficient. The
14 derivation of the beta-derived equity risk premium that I apply to the Utility Proxy
15 Group is shown on lines 1 through 11 of page 8 of Schedule DWD-4. The total
16 beta-derived equity risk premium I apply is based on an average of: 1) Historical
17 data-based equity risk premiums; 2) *Value Line*-based equity risk premiums; and
18 3) Bloomberg-based equity risk premium. Each of these is described in turn.

¹⁴ As shown on Line No. 2 and explained in note 2 of page 3 of Schedule DWD-4.

¹⁵ As shown on Line No. 4 and explained in note 3 on page 3 of Schedule DWD-4.

1 **Q. How did you derive a market equity risk premium based on long-term**
2 **historical data?**

3 A. To derive a historical market equity risk premium, I used the most recent holding
4 period returns for the large company common stocks from the 2017 Stocks, Bonds,
5 Bills, and Inflation (“SBBI”) Yearbook (“SBBI – 2017”)¹⁶ less the average historical
6 yield on Moody’s Aaa/Aa-rated corporate bonds for the period 1928 to 2016. The
7 use of holding period returns over a very long period of time is appropriate because
8 it is consistent with the long-term investment horizon presumed by investing in a
9 going concern, *i.e.*, a company expected to operate in perpetuity.

10 SBBI’s long-term arithmetic mean monthly total return rate on large
11 company common stocks was 11.69% and the long-term arithmetic mean monthly
12 yield on Moody’s Aaa/Aa-rated corporate bonds was 6.13%.¹⁷ As shown on line
13 1 of page 8 of Schedule DWD-4, subtracting the mean monthly bond yield from the
14 total return on large company stocks results in a long-term historical equity risk
15 premium of 5.56%.

16 I used the arithmetic mean monthly total return rates for the large company
17 stocks and yields (income returns) for the Moody’s Aaa/Aa corporate bonds,
18 because they are appropriate for the purpose of estimating the cost of capital as
19 noted in SBBI – 2017.¹⁸ The use of the arithmetic mean return rates and yields is
20 appropriate because historical total returns and equity risk premiums provide
21 insight into the variance and standard deviation of returns needed by investors in

¹⁶ SBBI Appendix A Tables: Morningstar Stocks, Bonds, Bills, & Inflation 1926-2016.

¹⁷ As explained in note 1 on page 8 of Schedule DWD-4.

¹⁸ SBBI – 2017, at 10-22.

1 estimating future risk when making a current investment. If investors relied on the
2 geometric mean of historical equity risk premiums, they would have no insight into
3 the potential variance of future returns because the geometric mean relates the
4 change over many periods to a constant rate of change, thereby obviating the year-
5 to-year fluctuations, or variance, which is critical to risk analysis.

6 **Q. Please explain the derivation of the regression-based market equity risk
7 premium.**

8 A. To derive the regression analysis-derived market equity risk premium of 7.31%,
9 shown on line 3 of page 8 of Schedule DWD-4, I used the same monthly
10 annualized total returns on large company common stocks relative to the monthly
11 annualized yields on Moody's Aaa/Aa corporate bonds as mentioned above. The
12 relationship between interest rates and the market equity risk premium was
13 modeled using the observed monthly market equity risk premium as the dependent
14 variable, and the monthly yield on Moody's Aaa/Aa corporate bonds as the
15 independent variable. I used a linear Ordinary Least Squares ("OLS") regression,
16 in which the market equity risk premium is expressed as a function of the Moody's
17 Aaa/Aa corporate bonds yield:

$$18 \quad RP = \alpha + \beta (R_{Aaa/Aa})$$

19 **Q. Please explain the derivation of a PRPM equity risk premium.**

20 A. I used the same PRPM approach described previously to develop another equity
21 risk premium estimate. The inputs to the model are the historical monthly returns
22 on large company common stocks minus the monthly yields on Aaa/Aa corporate

1 bonds during the period from January 1928 through March 2018.¹⁹ Using the
2 previously discussed generalized form of ARCH, known as GARCH, the projected
3 equity risk premium is determined using Eviews[®] statistical software. The resulting
4 PRPM predicted market equity risk premium is 6.66%.²⁰

5 The average historical data-based equity risk premium is 6.51%, which is
6 shown on line 4 of page 8 of Schedule DWD-4.

7 **Q. Please explain the derivation of a projected equity risk premium based on**
8 ***Value Line* data for your RPM analysis.**

9 A. Because both ratemaking and the cost of capital, including the cost rate of common
10 equity, are prospective, a prospective market equity risk premium is essential. The
11 derivation of the forecasted or prospective market equity risk premium can be
12 found in note 4 on page 8 of Schedule DWD-4. Consistent with my calculation of
13 the dividend yield component in my DCF analysis, this prospective market equity
14 risk premium is derived from an average of the three- to five-year median market
15 price appreciation potential by *Value Line* for the thirteen weeks ending March 30,
16 2018, plus an average of the median estimated dividend yield for the common
17 stocks of the 1,700 firms covered in *Value Line's* Standard Edition.²¹

18 The average median expected price appreciation is 33%, which translates
19 to a 7.39% annual appreciation, and, when added to the average of *Value Line's*

¹⁹ Data from January 1926-December 2016 is from SBBI – 2017. Data from January 2017 – March 2018 is from Bloomberg Professional Services.

²⁰ Shown on Line No. 2 on page 8 of Schedule DWD-4.

²¹ As explained in detail in page 2, note 1 of Schedule DWD-5.

1 median expected dividend yields of 1.95%, equates to a forecasted annual total
2 return rate on the market of 9.34%. The forecasted Aaa bond yield of 4.66% is
3 deducted from the total market return of 9.34%, resulting in an equity risk premium
4 of 4.68%, shown on page 8, line 5 of Schedule DWD-4.

5 **Q. Please explain the derivation of an equity risk premium based on the S&P**
6 **500 companies.**

7 A. Using data from *Value Line*, I calculate an expected total return on the S&P 500
8 using expected dividend yields and long-term growth estimates as a proxy for
9 capital appreciation. The expected total return for the S&P 500 is 15.73%.
10 Subtracting the prospective yield on Aaa Corporate bonds of 4.66% results in an
11 11.07% projected equity risk premium.

12 The average *Value Line*-based Equity risk premium is 7.87%, which is
13 shown on Line No. 7 on page 8 of Schedule DWD-4.

14 **Q. Please explain the derivation of an equity risk premium based on Bloomberg**
15 **data.**

16 A. Using data from Bloomberg Professional Services, I calculate an expected total
17 return on the S&P 500 using expected dividend yields and long-term growth
18 estimates as a proxy for capital appreciation, identical to the method described
19 above. The expected total return for the S&P 500 is 14.59%. Subtracting the
20 prospective yield on Aaa Corporate bonds of 4.66% results in a 9.93% projected
21 equity risk premium.

1 **Q. What is your conclusion of a beta-derived equity risk premium for use in your**
2 **RPM analysis?**

3 A. I give equal weight to equity risk premiums based on each source, historical, *Value*
4 *Line*, and Bloomberg in arriving at my conclusion of 8.10%.²²

5 After calculating the average market equity risk premium of 8.10%, I adjust
6 it by beta to account for the risk of the Utility Proxy Group. As discussed below,
7 the beta coefficient is a meaningful measure of prospective relative risk to the
8 market as a whole and is a logical means by which to allocate a company's or
9 proxy group's share of the market's total equity risk premium relative to corporate
10 bond yields. As shown on Schedule DWD-5, the average of the mean and median
11 beta coefficient for the Utility Proxy Group is 0.82. Multiplying the beta coefficient
12 of the Utility Proxy Group of 0.82 by the market equity risk premium of 8.10%
13 results in a beta-adjusted equity risk premium of 6.64% for the Utility Proxy Group.

14 **Q. How did you derive the equity risk premium based on the S&P Utility Index**
15 **and Moody's A-rated public utility bonds?**

16 A. I estimate three equity risk premiums based S&P Utility Index holding returns, and
17 two equity risk premiums based on the expected returns of the S&P Utilities Index,
18 using *Value Line* and Bloomberg data, respectively. Turning first to the S&P Utility
19 Index holding period returns, I derive a long-term monthly arithmetic mean equity
20 risk premium between the S&P Utility Index total returns of 10.63% and monthly
21 A-rated public utility bond yields of 6.59% from 1928 to 2017 to arrive at an equity

²² 8.10% = (6.51% + 7.87% + 9.93%)/3. See Line No. 9 on page 8 of Schedule DWD-4.

1 risk premium of 4.04%.²³ I then use the same historical data stated above to derive
2 an equity risk premium of 5.61% based on a regression of the monthly equity risk
3 premiums. The final S&P Utility Index holding period equity risk premium applies
4 the PRPM using the historical monthly equity risk premiums from January 1928 to
5 March 2018 to arrive at a PRPM-derived equity risk premium of 4.18% for the S&P
6 Utility Index. The average of the three S&P Utilities Index holding return equity risk
7 premiums is 4.61%.

8 I then derive expected total returns on the S&P Utilities Index of 9.80% and
9 10.31% using data from *Value Line* and Bloomberg Professional Services,
10 respectively, and subtract the prospective A2-rated public utility bond yield
11 (4.94%²⁴), which results in risk premiums of 4.86% and 5.37%, respectively. As
12 with the market equity risk premiums, I average the risk premium based on each
13 source (*i.e.*, Historical, *Value Line*, and Bloomberg) to arrive at my utility-specific
14 equity risk premium of 4.95%.²⁵

15 **Q. What is your conclusion of an equity risk premium for use in your total**
16 **market approach RPM analysis?**

17 **A.** The equity risk premium I apply to the Utility Proxy Group is 5.80%, which is the
18 average of the beta-derived and the S&P utility equity risk premiums of 6.64% and
19 4.95%, respectively.²⁶

²³ As shown on Line No. 1 on page 12 of Schedule DWD-4.

²⁴ Derived on Line No. 3 of page 3 of Schedule DWD-4.

²⁵ $4.95\% = (4.61\% + 4.86\% + 5.37\%)/3$.

²⁶ As shown on page 7 of Schedule DWD-4.

1 **Q. What is the indicated RPM common equity cost rate based on the total**
2 **market approach?**

3 A. As shown on Line No. 7 on Schedule DWD-4, page 3, I calculate a common equity
4 cost rate of 10.80% for the Utility Proxy Group based on the total market approach
5 of the RPM.

6 **Q. What are the results of your application of the PRPM and the total market**
7 **approach RPM?**

8 A. As shown on page 1 of Schedule DWD-4, the indicated RPM-derived common
9 equity cost rate is 12.12%, which gives equal weight to the PRPM (13.43%) and
10 the adjusted market approach results (10.80%).

11 **C. The Capital Asset Pricing Model**

12 **Q. Please explain the theoretical basis of the CAPM.**

13 A. CAPM theory defines risk as the co-variability of a security's returns with the
14 market's returns as measured by the beta coefficient (β). A beta coefficient less
15 than 1.0 indicates lower variability than the market as a whole, while a beta
16 coefficient greater than 1.0 indicates greater variability than the market.

17 The CAPM assumes that all other risk (*i.e.*, all non-market or unsystematic
18 risk) can be eliminated through diversification. The risk that cannot be eliminated
19 through diversification is called market, or systematic, risk. In addition, the CAPM
20 presumes that investors require compensation only for systematic risk which is the
21 result of macroeconomic and other events that affect the returns on all assets. The
22 model is applied by adding a risk-free rate of return to a market risk premium, which
23 is adjusted proportionately to reflect the systematic risk of the individual security

1 relative to the total market as measured by the beta coefficient. The traditional
2 CAPM model is expressed as:

$$3 \quad R_s = R_f + \beta(R_m - R_f)$$

4 Where: R_s = Return rate on the common stock

5 R_f = Risk-free rate of return

6 R_m = Return rate on the market as a whole

7 β = Adjusted beta coefficient (volatility of the
8 security relative to the market as a whole)

9 Numerous tests of the CAPM have measured the extent to which security
10 returns and beta coefficients are related as predicted by the CAPM, confirming its
11 validity. The empirical CAPM ("ECAPM") reflects the reality that while the results
12 of these tests support the notion that the beta coefficient is related to security
13 returns, the empirical Security Market Line ("SML") described by the CAPM
14 formula is not as steeply sloped as the predicted SML.²⁷ In view of theory and
15 practical research, I have applied both the traditional CAPM and the ECAPM to the
16 companies in the Utility Proxy Group and averaged the results.

17 **Q. What beta coefficients did you use in your CAPM analysis?**

18 A. With respect to the beta coefficient, I considered two methods of calculation: the
19 average of the Beta coefficients of the Utility Proxy Group companies reported by
20 Bloomberg Professional Services, and the average of the Beta coefficients of the
21 Utility Proxy Group companies as reported by *Value Line*. While both of those
22 services adjust their calculated (or "raw") Beta coefficients to reflect the tendency

²⁷ Roger A. Morin, *New Regulatory Finance* (Public Utility Reports, Inc., 2006), at p. 175.

1 of the Beta coefficient to regress to the market mean of 1.00, *Value Line* calculates
2 the Beta coefficient over a five-year period, while Bloomberg's calculation is based
3 on two years of data.

4 **Q. Please describe your selection of a risk-free rate of return.**

5 A. As shown in column 5 on page 1 of Schedule DWD-5, the risk-free rate adopted
6 for both applications of the CAPM is 3.69%. This risk-free rate of 3.69% is based
7 on the average of the *Blue Chip* consensus forecast of the expected yields on 30-
8 year U.S. Treasury bonds for the six quarters ending with the third calendar quarter
9 of 2019 and long-term projections for the years 2019 to 2023 and 2024 to 2028.

10 **Q. Why is the yield on long-term U.S. Treasury Bonds appropriate for use as the**
11 **risk-free rate?**

12 A. The yield on long-term U.S. Treasury Bonds is almost risk-free and its term is
13 consistent with the long-term cost of capital to public utilities measured by the
14 yields on A-rated public utility bonds; the long-term investment horizon inherent in
15 utilities' common stocks; and the long-term life of the jurisdictional rate base to
16 which the allowed fair rate of return (*i.e.*, cost of capital) will be applied. In contrast,
17 short-term U.S. Treasury yields are more volatile and largely a function of Federal
18 Reserve monetary policy.

1 **Q. Please explain the estimation of the expected risk premium for the market**
2 **used in your CAPM analyses.**

3 A. The basis of the market risk premium is explained in detail in Note 1 on Schedule
4 DWD-5. As discussed previously, the market risk premium is derived from an
5 average of:

- 6 1) Historical data-based market risk premiums;
- 7 2) *Value Line* data-based market risk premiums;
- 8 3) Bloomberg data-based market risk premium;

9 The long-term income return on U.S. Government Securities of 5.17% was
10 deducted from the *SBBI-2017* monthly historical total market return of 11.97%,
11 which results in an historical market equity risk premium of 6.80%.²⁸ I applied a
12 linear OLS regression to the monthly annualized historical returns on the S&P 500
13 relative to historical yields on long-term U.S. Government Securities from *SBBI-*
14 *2017*. That regression analysis yielded a market equity risk premium of 8.49%.
15 The PRPM market equity risk premium is 7.55% and is derived using the PRPM
16 relative to the yields on long-term U.S. Treasury securities from January 1926
17 through March 2018. The average of the historical data-based market risk
18 premiums is 7.61%.²⁹

19 The *Value Line*-derived forecasted total market equity risk premium is
20 derived by deducting the forecasted risk-free rate of 3.69%, discussed above, from
21 the *Value Line* projected total annual market return of 9.34%, resulting in a

²⁸ SBBI – 2016, at pp. 3-5 and 21-23.

²⁹ $7.61\% = (6.80\% + 8.49\% + 7.55\%)/3$.

1 forecasted total market equity risk premium of 5.65%. The S&P 500 projected
2 market equity risk premium using *Value Line* data is derived by subtracting the
3 projected risk-free rate of 3.69% from the projected total return of the S&P 500 of
4 15.73%. The resulting market equity risk premium is 12.04%. The average *Value*
5 *Line* market risk premium is 8.84%.³⁰

6 The S&P 500 projected market equity risk premium using Bloomberg data
7 is derived by subtracting the projected risk-free rate of 3.69% from the projected
8 total return of the S&P 500 of 14.59%. The resulting market equity risk premium
9 is 10.90%.

10 These three sources (historical, *Value Line*, and Bloomberg), when
11 averaged, result in an average total market equity risk premium of 9.12%.³¹

12 **Q. What are the results of your application of the traditional and empirical**
13 **CAPM to the Utility Proxy Group?**

14 A. As shown on page 1 of Schedule DWD-5, the mean result of my CAPM/ECAPM
15 analyses is 11.25%, the median is 11.37%, and the average of the two is 11.31%.
16 Consistent with my reliance on the average of mean and median DCF results
17 discussed above, the indicated common equity cost rate using the CAPM/ECAPM
18 is 11.31%.

³⁰ 8.84% = (5.65% + 12.04%)/2.

³¹ 9.12% = (7.61% + 8.84% + 10.90%)/3.

1 **D. Common Equity Cost Rates for a Proxy Group of Domestic, Non-**
2 **Price Regulated Companies Based on the DCF, RPM, and CAPM**

3 **Q. Why do you also consider a proxy group of domestic, non-price regulated**
4 **companies?**

5 A. In the *Hope* and *Bluefield* cases, the U.S. Supreme Court did not specify that
6 comparable risk companies had to be utilities. Since the purpose of rate regulation
7 is to be a substitute for the competition of the marketplace, non-price regulated
8 firms operating in the competitive marketplace make an excellent proxy if they are
9 comparable in total risk to the Utility Proxy Group being used to estimate the cost
10 of common equity. The selection of such domestic, non-price-regulated
11 competitive firms theoretically and empirically results in a proxy group which is
12 comparable in total risk to the Utility Proxy Group.

13 **Q. How did you select unregulated companies that are comparable in total risk**
14 **to the regulated public Utility Proxy Group?**

15 A. In order to select a proxy group of domestic, non-price regulated companies similar
16 in total risk to the Utility Proxy Group, I rely on the beta coefficients and related
17 statistics derived from *Value Line* regression analyses of weekly market prices
18 over the most recent 260 weeks (*i.e.*, five years). Using these selection criteria
19 results in a proxy group of seventeen domestic, non-price regulated firms
20 comparable in total risk to the Utility Proxy Group. Total risk is the sum of non-
21 diversifiable market risk and diversifiable company-specific risks. The criteria used
22 in the selection of the domestic, non-price regulated firms were:

- 23 1) They must be covered by *Value Line Investment Survey* (Standard Edition);
24 2) They must be domestic, non-price regulated companies, *i.e.*, non-utilities;

1 3) Their beta coefficients must lie within plus or minus two standard deviations
2 of the average unadjusted beta of the Utility Proxy Group; and

3 4) The residual standard errors of the *Value Line* regressions which gave rise
4 to the unadjusted beta coefficients must lie within plus or minus two
5 standard deviations of the average residual standard error of the Utility
6 Proxy Group.

7 Beta coefficients are a measure of market, or systematic, risk, which is not
8 diversifiable. The residual standard errors of the regressions were used to
9 measure each firm's company-specific, diversifiable risk. Companies that have
10 similar betas and similar residual standard errors resulting from the same
11 regression analyses have similar total investment risk.

12 **Q. Have you prepared a schedule which shows the data from which you**
13 **selected the seventeen domestic, non-price regulated companies that are**
14 **comparable in total risk to the Utility Proxy Group?**

15 A. Yes, the basis of my selection and both proxy groups' regression statistics are
16 shown in Schedule DWD-6.

17 **Q. Did you calculate common equity cost rates using the DCF, RPM, and CAPM**
18 **for the Non-Price Regulated Proxy Group?**

19 A. Yes. Because the DCF, RPM, and CAPM have been applied in an identical
20 manner as described above, I will not repeat the details of the rationale and
21 application of each model. An exception is that, in the application of the RPM, I
22 did not use public utility-specific equity risk premiums, nor have I applied the PRPM
23 to the individual companies.

1 Page 2 of Schedule DWD-7 contains the derivation of the DCF cost rates.
2 As shown, the indicated common equity cost rate using the DCF for the Non-Price
3 Regulated Proxy Group comparable in total risk to the Utility Proxy Group, is
4 14.15%.

5 Pages 3 through 5 contain the data and calculations that support the
6 12.46% RPM cost rate. As shown on Line No. 1 of page 3 of Schedule DWD-7,
7 the consensus prospective yield on Moody's Baa rated corporate bonds for the six
8 quarters ending in the third quarter of 2019 and for the years 2019 to 2023 and
9 2024 to 2028 is 5.41%.³² When the beta-adjusted risk premium of 7.05%³³ relative
10 to the Non-Price Regulated Proxy Group is added to the prospective Baa2 rated
11 corporate bond yield of 5.41%, the indicated RPM cost rate is 12.46%.

12 Page 6 contains the inputs and calculations that support my indicated
13 CAPM/ECAPM cost rate of 11.78%.

14 **Q. How is the cost rate of common equity based on the Non-Price Regulated**
15 **Proxy Group comparable in total risk to the Utility Proxy Group?**

16 **A.** As shown on page 1 of Schedule DWD-7, the results of the DCF, RPM, and CAPM
17 applied to the Non-Price Regulated Proxy Group comparable in total risk to the
18 Utility Proxy Group are 14.15%, 12.46%, and 11.78%, respectively. The average
19 of the mean and median of these models is 12.63%, which I use as the indicated
20 common equity cost rate for the Non-Price Regulated Proxy Group.

³² *Blue Chip Financial Forecasts*, April 1, 2018, at p. 2 and December 1, 2017, at p. 14.

³³ Derived on page 5 of Schedule DWD-7.

1 **VIII. CONCLUSION OF RANGE OF COMMON EQUITY COST RATES BEFORE**
2 **ADJUSTMENT**

3 **Q. What is the indicated range of common equity cost rates before adjustment?**

4 A. Based on the results of the application of multiple cost of common equity models
5 to the Utility Proxy Group and the Non-Price Regulated Proxy Group, the indicated
6 range of cost of equity before adjustments is from 10.20% to 11.30%. I use
7 multiple cost of common equity models as primary tools in arriving at my
8 recommended common equity cost rate, because no single model is so inherently
9 precise that it can be relied on solely to the exclusion of other theoretically sound
10 models. The use of multiple models adds reliability to the estimation of the
11 common equity cost rate, and the prudence of using multiple cost of common
12 equity models is supported in both the financial literature and regulatory precedent.

13 Based on these common equity cost rate results, I conclude that a range of
14 common equity cost rates from 10.20% to 11.30% is reasonable and appropriate
15 for the Company before any adjustment is made for relative risk between the
16 Company and the Utility Proxy Group.

17 **IX. ADJUSTMENT TO THE RANGE OF COMMON EQUITY COST RATES**

18 **A. Size Risk Adjustment**

19 **Q. Does SUEZ PA have increased business risk relative to the proxy group?**

20 A. Yes. The Company has greater relative risk than the average company in the
21 Utility Proxy Group because of its smaller size compared with the group.

22 **Q. Please explain the risk associated with small size.**

1 A. Both the financial and academic communities have long accepted the proposition
2 that the Cost of Equity for small firms is subject to a “size effect.”³⁴ While empirical
3 evidence of the size effect often is based on studies of industries beyond regulated
4 utilities, utility analysts also have noted the risks associated with small market
5 capitalizations. Specifically, Ibbotson Associates noted: “For small utilities,
6 investors face additional obstacles, such as a smaller customer base, limited
7 financial resources, and a lack of diversification across customers, energy sources,
8 and geography. These obstacles imply the need for a higher investor return.”³⁵
9 Further evidence of the risk effects of size include the fact that investors demand
10 greater returns to compensate for the lack of marketability and liquidity of the
11 securities of smaller firms. As discussed below, relative to the proxy group SUEZ
12 PA’s operations are both substantially smaller in size and less diversified.

13 **Q. Is there a way to quantify a relative risk adjustment due to SUEZ PA’s higher**
14 **business risk relative to the Utility Proxy Group?**

15 A. Yes. The Company has greater business risk than the companies in the Utility
16 Proxy Group as discussed above. As a proxy for business risk, I have used the
17 SBBI – 2017 size deciles, as measured by an estimated market capitalization of
18 common equity for SUEZ PA (whose common stock is not publicly-traded).

³⁴ See Mario Levis, *The record on small companies: A review of the evidence*, Journal of Asset Management, March 2002, at 368-397, for a review of literature relating to the size effect.

³⁵ Michael Annin, *Equity and the Small-Stock Effect*, Public Utilities Fortnightly, October 15, 1995.

Table 5: Size as Measured by Market Capitalization for the Company and the Utility Proxy Group

	<u>Market Capitalization*</u> (\$ Millions)	<u>Times Greater than the Company</u>
SUEZ PA	\$396.361	
Utility Proxy Group	\$4,240.418	10.7x

*From page 1 of Schedule DWD-8.

The Company's estimated market capitalization was at \$396.361 million as of March 29, 2018, compared with the market capitalization of the average water company in the Utility Proxy Group of \$4.240 billion as of March 29, 2018. The Utility Proxy Group's market capitalization is 10.7 times the size of SUEZ PA's estimated market capitalization.

As a result, it is necessary to upwardly adjust the indicated range of common equity cost rates to reflect SUEZ PA's greater risk due to its higher relative business risk. The determination is based on the size premiums for portfolios of New York Stock Exchange ("NYSE"), American Stock Exchange ("AMEX"), and NASDAQ listed companies ranked by deciles for the 1926 to 2016 period. The average size premium for the Utility Proxy Group with a market capitalization of \$4.240 billion falls in the 4th decile, while SUEZ PA's market capitalization of \$396.361 million puts the Company in the 9th decile. The size premium spread between the 9th decile and the 4th decile is 1.70%. Even though a 1.70% upward business risk adjustment is indicated, I apply a size premium of 0.20% to SUEZ PA's indicated range of common equity cost rates.

1 **Q. What is the indicated range of common equity cost rates after your**
2 **adjustment for size risk?**

3 A. After applying the 0.20% size adjustment to the indicated range of common equity
4 cost rates, a size-adjusted range of common equity cost rates from 10.40% to
5 11.50% results.

6 **X. CONCLUSION OF COMMON EQUITY COST RATE**

7 **Q. What is your recommended cost of common equity for SUEZ PA?**

8 A. I conclude that an appropriate cost of common equity for the Company falls
9 between the size-adjusted common equity cost rate range from 10.40% to 11.50%.

10 **Q. Is your recommended range of common equity cost rates between 10.40%**
11 **and 11.50% reasonable for SUEZ PA?**

12 A. In my opinion, a common equity cost rate that falls in the range between 10.40%
13 and 11.50% is both reasonable and conservative and would provide SUEZ PA with
14 sufficient earnings to enable it to attract necessary new capital.

15 **Q. Does that conclude your direct testimony?**

16 A. Yes, it does.

SUEZ Water Pennsylvania Inc.
Recommended Capital Structure and Cost Rates
for Ratemaking Purposes
Projected at January 31, 2018

<u>Type Of Capital</u>	<u>Ratios (1)</u>	<u>Cost Rate</u>	<u>Weighted Cost Rate</u>
Long-Term Debt	45.82%	4.65% (2)	2.13%
Common Equity	<u>54.18%</u>	10.40% - 11.50% (3)	<u>5.63% - 6.23%</u>
Total	<u>100.00%</u>		<u>7.76% - 8.36%</u>

Notes:

(1) Company-Provided.

(2) From page 2 of this Schedule.

(3) From page 3 of this Schedule.

SUEZ Water Pennsylvania Inc.
SUEZ Water Resources Actual Composite Long-Term Debt Cost Rate

Line #	[1] Description of Debt	[2] Issue Date	[3] Maturity Date	[4] [a] Outstanding Amount	[5] Unamortized Net Discount, Premium and Expense	[6] Net Proceeds (C.4+/-C.5)	[7] Stated Interest Rate	[8] Annual Interest Expense (C.4xC.7)	[9] Amortization of Net Discount Premium and Expense	[10] Annual Cost (C.8+C.9)	[11] Effective Cost Rate	[12] Weighted Embedded Cost Rate
1	Medium Term Note Series A 1998	Feb-98	Feb-23	25,000,000	486,060	24,513,940	6.97%	1,742,500	97,212	1,839,712	7.50%	0.20%
3	Medium Term Note Series A 1998	Feb-98	Feb-18	15,000,000	80,160	14,919,840	7.10%	1,065,000	8,016	1,073,016	7.19%	0.11%
5	NEW UWR SENIOR NOTES 2015 SERIES A	Aug-15	Aug-30	75,000,000	377,215	74,622,785	3.80%	2,850,000	29,977	2,879,977	3.86%	0.31%
6	NEW UWR SENIOR NOTES 2015 SERIES B	Aug-15	Aug-31	75,000,000	381,742	74,618,258	3.60%	2,700,000	28,104	2,728,104	3.66%	0.29%
7	NEW UWR SENIOR NOTES 2015 SERIES C	Aug-15	Aug-35	125,000,000	659,022	124,340,978	4.09%	5,112,500	37,480	5,149,980	4.14%	0.55%
8	Tax Exempt-Dauphin 92 TEF Series A	Jun-92	Jun-24	10,000,000	123,160	9,876,840	6.90%	690,000	18,480	708,480	7.17%	0.08%
11	Senior Note Series 2010	Jan-10	Jan-25	45,000,000	621,600	44,378,400	4.92%	2,214,000	88,800	2,302,800	5.19%	0.25%
13	Senior Note Series B	Nov-07	Nov-28	15,000,000	78,780	14,921,220	6.13%	919,500	7,272	926,772	6.21%	0.10%
14	Medium Term Note Mutual of Omaha A	Oct-08	Oct-29	7,500,000	28,840	7,471,160	6.54%	490,500	2,472	492,972	6.60%	0.05%
15	Medium Term Note Mutual of Omaha B	Dec-08	Dec-29	7,500,000	29,252	7,470,748	6.59%	494,250	2,472	496,722	6.65%	0.05%
16	Medium Term Note NY Life A	Oct-08	Oct-18	12,500,000	5,760	12,494,240	6.21%	776,250	5,760	782,010	6.26%	0.08%
17	Medium Term Note NY Life B	Dec-08	Dec-18	12,500,000	7,240	12,492,760	6.31%	788,750	7,240	795,990	6.37%	0.09%
18	Tax-Exempt-NY Series 2010A	Sep-10	Sep-40	35,000,000	815,981	34,184,019	4.88%	1,706,250	36,132	1,742,382	5.10%	0.19%
19	Senior Note Series 2011	Dec-11	Dec-27	20,000,000	525,266	19,474,734	4.10%	820,000	52,968	872,968	4.48%	0.09%
20	Private Placement Note Series A	Apr-11	Apr-21	35,000,000	64,724	34,935,276	4.38%	1,533,000	20,388	1,553,388	4.45%	0.17%
21	Private Placement Note Series B	Apr-11	Apr-26	40,000,000	577,446	39,422,554	4.68%	1,872,000	70,704	1,942,704	4.93%	0.21%
22	Senior Note 2018 Series C	Jan-18	Jan-33	65,000,000	333,406	64,666,594	3.30%	2,145,000	0	2,145,000	3.32%	0.23%
23	Senior Note 2018 Series D	Jan-18	Jan-48	65,000,000	333,406	64,666,594	3.77%	2,450,500	0	2,450,500	3.79%	0.26%
25	Senior Note 2017 Series A	Dec-17	Dec-32	70,000,000	391,574	69,608,426	3.30%	2,310,000	26,251	2,336,251	3.36%	0.25%
26	Senior Note 2017 Series B	Dec-17	Dec-47	75,000,000	375,366	74,624,634	3.77%	2,827,500	12,547	2,840,047	3.81%	0.30%
27	North Jersey Water District	n/a	Jul-24	107,382	0	107,382	6.58%	7,066	0	7,066	6.58%	0.00%
28	Senior Note 2012 Series A	Oct-12	Oct-27	10,000,000	332,534	9,667,466	3.47%	347,000	34,392	381,392	3.95%	0.49%
29	Senior Note 2012 Series B	Oct-12	Oct-32	30,000,000	1,131,935	28,868,065	3.91%	1,173,000	77,172	1,250,172	4.33%	0.13%
30	Senior Note	Jan-95	Jan-25	12,000,000	27,891	11,972,109	8.98%	1,077,600	4,032	1,081,632	9.03%	0.12%
31	Senior Note Series 2010	Feb-10	Feb-20	30,000,000	47,650	29,952,350	4.74%	1,422,000	22,872	1,444,872	4.82%	0.15%
32	UWR		Jan-19	5,000,000	8,750	4,991,250	7.04%	352,000	3,000	355,000	7.11%	0.04%
33	UWR		Jun-22	25,000,000	0	25,000,000	7.90%	1,975,000	0	1,975,000	7.90%	0.21%
34	UWR		Jan-19	769,230	4,375	764,855	6.70%	51,538	1,500	53,038	6.93%	0.01%
35	Total Long-Term Debt			942,876,612	7,849,134	935,027,478		41,912,704	737,291	42,649,995		4.56%
36	Additional Debt Costs											
37	Unamortized Costs Associated With Retired Medium Term Note (\$10M@8.84%)				39,312				5,616	5,616	0.001%	0.001%
38	Premium on Retirement of Medium Term Note				154,644				22,092	22,092	0.00%	0.00%
39	Premium on Retirement of Prudential Capital Corp.Debt (\$20M @10.05%, and \$15M @ 9.57%)				2,131,200				340,992	340,992	0.04%	0.04%
40	Premium on Amortized \$25MM 4.392%, \$20MM 4.318% and \$20MM 4.319%				54,436				17,458	17,458	0.00%	0.00%
41	Unamortized Costs Associated With Retired 06/1/2002 Jacksonville Debt (\$12M @ 6.75%)				108,004				24,924	24,924	0.00%	0.00%
42	PEDFA SUEZ Water PA 2007 - Retired 12/13/17				831,842				2,311	2,311	0.00%	0.00%
43	ID Water Resource Dev Rev ID 2005 - Retired 12/14/17 2005				1,176,858				6,538	6,538	0.00%	0.00%
43	EDA Fixed Rate Bonds - Retired 01/25/18				2,499,270				6,942	6,942	0.00%	0.00%
44	EDA Fixed Rate Bonds 1996 - Retired 01/25/18				2,499,270				13,885	13,885	0.00%	0.00%
45	Call Premium retired bonds 2018				1,300,000				7,222	7,222	0.00%	0.00%
46	Call Premium retired bonds 2018				1,300,000				3,611	3,611	0.00%	0.00%
44	EDA Fixed Rate Bonds - Retired 08/31/15				613,101				42,048	42,048	0.00%	0.00%
45	EDA Fixed Rate Bonds - Retired 08/31/15				1,842,297				126,324	126,324	0.01%	0.01%
46	Tax Exempt-Boise 2001 TEF - Retired 08/31/15				1,819,572				124,776	124,776	0.01%	0.013%
47	Tax Exempt-DE 2002 TEF - Retired 08/31/15				1,137,554				78,000	78,000	0.01%	0.008%
48	Tax Exempt NY (NR) 2002 TEF - Retired 08/31/15				847,289				58,092	58,092	0.01%	0.006%
49	Totals				26,203,782				1,618,122	43,530,827		4.65%

SUEZ Water Pennsylvania Inc.
Brief Summary of Common Equity Cost Rate

<u>Line No.</u>	<u>Principal Methods</u>	<u>Proxy Group of Six Water Companies</u>
1.	Discounted Cash Flow Model (DCF) (1)	9.10%
2.	Risk Premium Model (RPM) (2)	12.12%
3.	Capital Asset Pricing Model (CAPM) (3)	11.31%
4.	Market Models Applied to Comparable Risk, Non-Price Regulated Companies (4)	<u>12.63%</u>
5.	Indicated Range of Common Equity Cost Rate before Adjustment for Size Risk	10.20%-11.30%
6.	Size Risk Adjustment (5)	<u>0.20%</u>
7.	Recommended Range of Common Equity Cost Rates	<u><u>10.40%-11.50%</u></u>

- Notes: (1) From Schedule DWD-3.
(2) From page 1 of Schedule DWD-4.
(3) From page 1 of Schedule DWD-5.
(4) From page 1 of Schedule DWD-7.
(5) From Schedule DWD-8.

Proxy Group of Six Water Companies
CAPITALIZATION AND FINANCIAL STATISTICS (1)
2012 - 2016, Inclusive

	<u>2017</u>	<u>2016</u>	<u>2015</u>	<u>2014</u>	<u>2013</u>	
	(MILLIONS OF DOLLARS)					
CAPITALIZATION STATISTICS						
<u>AMOUNT OF CAPITAL EMPLOYED</u>						
TOTAL PERMANENT CAPITAL	\$3,164.203	\$2,984.170	\$2,830.411	\$2,686.017	\$2,572.465	
SHORT-TERM DEBT	\$211.958	\$175.773	\$118.223	\$94.412	\$123.719	
TOTAL CAPITAL EMPLOYED	<u>\$3,376.161</u>	<u>\$3,159.943</u>	<u>\$2,948.634</u>	<u>\$2,780.429</u>	<u>\$2,696.184</u>	
<u>INDICATED AVERAGE CAPITAL COST RATES (2)</u>						
TOTAL DEBT	4.78 %	4.93 %	5.02 %	5.162 %	5.33 %	
PREFERRED STOCK	5.91 %	5.91 %	5.91 %	5.67 %	6.09 %	
CAPITAL STRUCTURE RATIOS						
<u>5 YEAR AVERAGE</u>						
<u>BASED ON TOTAL PERMANENT CAPITAL:</u>						
LONG-TERM DEBT	45.27 %	45.38 %	45.90 %	44.69 %	45.25 %	45.30 %
PREFERRED STOCK	0.12	0.13	0.13	0.14	0.18	0.14
COMMON EQUITY	54.61	54.49	53.97	55.17	54.57	54.56
TOTAL	<u>100.00 %</u>	<u>100.00 %</u>	<u>100.00 %</u>	<u>100.00 %</u>	<u>100.00 %</u>	<u>100.00 %</u>
<u>BASED ON TOTAL CAPITAL:</u>						
TOTAL DEBT, INCLUDING SHORT-TERM	48.90 %	47.91 %	47.03 %	46.27 %	47.02 %	47.43 %
PREFERRED STOCK	0.11	0.12	0.13	0.14	0.16	0.13
COMMON EQUITY	50.99	51.97	52.84	53.60	52.82	52.44
TOTAL	<u>100.00 %</u>	<u>100.00 %</u>	<u>100.00 %</u>	<u>100.00 %</u>	<u>100.00 %</u>	<u>100.00 %</u>
FINANCIAL STATISTICS						
<u>FINANCIAL RATIOS - MARKET BASED</u>						
EARNINGS / PRICE RATIO	3.42 %	3.63 %	4.38 %	4.88 %	4.91 %	4.25 %
MARKET / AVERAGE BOOK RATIO	318.59	290.78	239.19	223.55	214.84	257.39
DIVIDEND YIELD	1.71	2.19	2.65	2.77	2.89	2.44
DIVIDEND PAYOUT RATIO	59.30	60.14	60.04	56.31	57.21	58.60
<u>RATE OF RETURN ON AVERAGE BOOK COMMON EQUITY</u>	10.89 %	10.57 %	10.43 %	10.90 %	10.61 %	10.68 %
<u>TOTAL DEBT / EBITDA (3)</u>	3.56 X	3.51 X	3.43 X	3.31 X	3.45 X	3.45 X
<u>FUNDS FROM OPERATIONS / TOTAL DEBT (4)</u>	22.69 %	22.50 %	26.10 %	26.48 %	24.11 %	24.38 %
<u>TOTAL DEBT / TOTAL CAPITAL</u>	48.90 %	47.91 %	47.03 %	46.27 %	47.02 %	47.42 %

Notes:

- (1) All capitalization and financial statistics for the group are the arithmetic average of the achieved results for each individual company in the group, and are based upon financial statements as originally reported in each year.
- (2) Computed by relating actual total debt interest or preferred stock dividends booked to average of beginning and ending total debt or preferred stock reported to be outstanding.
- (3) Total debt relative to EBITDA (Earnings before Interest, Income Taxes, Depreciation and Amortization).
- (4) Funds from operations (sum of net income, depreciation, amortization, net deferred income tax and investment tax credits, less total AFUDC) plus interest charges as a percentage of total debt.

Source of Information: Company Annual Forms 10-K

Capital Structure Based upon Total Permanent Capital for the
Proxy Group of Six Water Companies
2012 - 2016, Inclusive

	2017	2016	2015	2014	2013	5 YEAR AVERAGE
<u>American States Water Co.</u>						
Long-Term Debt	37.75 %	39.40 %	41.15 %	39.15 %	40.30 %	39.55 %
Preferred Stock	0.00	0.00	0.00	0.00	0.00	0.00
Common Equity	62.25	60.60	58.85	60.85	59.70	60.45
Total Capital	<u>100.00 %</u>	<u>100.00 %</u>	<u>100.00 %</u>	<u>100.00 %</u>	<u>100.00 %</u>	<u>100.00 %</u>
<u>American Water Works Company Inc.</u>						
Long-Term Debt	55.81 %	54.74 %	53.89 %	52.70 %	52.42 %	53.91 %
Preferred Stock	0.07	0.09	0.11	0.15	0.17	0.12
Common Equity	44.12	45.17	46.00	47.15	47.41	45.97
Total Capital	<u>100.00 %</u>	<u>100.00 %</u>	<u>100.00 %</u>	<u>100.00 %</u>	<u>100.00 %</u>	<u>100.00 %</u>
<u>Aqua America Inc.</u>						
Long-Term Debt	52.26 %	50.81 %	50.76 %	49.45 %	50.32 %	50.72 %
Preferred Stock	0.00	0.00	0.00	0.00	0.01	0.00
Common Equity	47.74	49.19	49.24	50.55	49.67	49.28
Total Capital	<u>100.00 %</u>	<u>100.00 %</u>	<u>100.00 %</u>	<u>100.00 %</u>	<u>100.00 %</u>	<u>100.00 %</u>
<u>California Water Service Group</u>						
Long-Term Debt	44.12 %	45.83 %	44.69 %	40.46 %	42.03 %	43.43 %
Preferred Stock	0.00	0.00	0.00	0.00	0.00	0.00
Common Equity	55.88	54.17	55.31	59.54	57.97	56.57
Total Capital	<u>100.00 %</u>	<u>100.00 %</u>	<u>100.00 %</u>	<u>100.00 %</u>	<u>100.00 %</u>	<u>100.00 %</u>
<u>Middlesex Water Co.</u>						
Long-Term Debt	38.65 %	38.91 %	40.44 %	41.55 %	41.37 %	40.18 %
Preferred Stock	0.64	0.68	0.69	0.71	0.88	0.72
Common Equity	60.71	60.41	58.87	57.74	57.75	59.10
Total Capital	<u>100.00 %</u>	<u>100.00 %</u>	<u>100.00 %</u>	<u>100.00 %</u>	<u>100.00 %</u>	<u>100.00 %</u>
<u>York Water Co.</u>						
Long-Term Debt	43.02 %	42.60 %	44.46 %	44.81 %	45.07 %	43.99 %
Preferred Stock	0.00	0.00	0.00	0.00	0.00	0.00
Common Equity	56.98	57.40	55.54	55.19	54.93	56.01
Total Capital	<u>100.00 %</u>	<u>100.00 %</u>	<u>100.00 %</u>	<u>100.00 %</u>	<u>100.00 %</u>	<u>100.00 %</u>
<u>Proxy Group of Six Water Companies</u>						
Long-Term Debt	45.27 %	45.38 %	45.90 %	44.69 %	45.25 %	45.30 %
Preferred Stock	0.12	0.13	0.13	0.14	0.18	0.14
Common Equity	54.61	54.49	53.97	55.17	54.57	54.56
Total Capital	<u>100.00 %</u>	<u>100.00 %</u>	<u>100.00 %</u>	<u>100.00 %</u>	<u>100.00 %</u>	<u>100.00 %</u>

Source of Information
Annual Forms 10-K

SUEZ Water Pennsylvania Inc.
Indicated Common Equity Cost Rate Using the Discounted Cash Flow Model for
Proxy Group of Six Water Companies

	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]
<u>Proxy Group of Six Water Companies</u>	<u>Average Dividend Yield (1)</u>	<u>Value Line Projected Five Year Growth in EPS (2)</u>	<u>Reuters Mean Consensus Projected Five Year Growth Rate in EPS</u>	<u>Zack's Five Year Projected Growth Rate in EPS</u>	<u>Yahoo! Finance Projected Five Year Growth in EPS</u>	<u>Average Projected Five Year Growth in EPS (3)</u>	<u>Adjusted Dividend Yield (4)</u>	<u>Indicated Common Equity Cost Rate (5)</u>
American States Water Co.	1.89 %	6.50 %	4.00 %	5.00 %	4.00 %	4.88 %	1.94 %	6.82 %
American Water Works Company Inc	2.04	8.50	10.60	7.50	8.20	8.70	2.13	10.83
Aqua America Inc	2.36	7.00	7.00	6.00	5.00	6.25	2.43	8.68
California Water Service Group	1.88	10.00	NA	6.00	9.80	8.60	1.96	10.56
Middlesex Water Co.	2.43	9.00	NA	NA	2.70	5.85	2.50	8.35
York Water Co.	2.18	9.50	NA	NA	4.90	7.20	2.26	9.46
							Average	<u>9.12 %</u>
							Median	<u>9.07 %</u>
							Average of Mean and Median	<u>9.10 %</u>

NA= Not Available

Notes:

- (1) Indicated dividend at 03/29/2018 divided by the average closing price of the last 60 trading days ending 03/29/2018 for each company.
- (2) From pages 2 through 7 of this Schedule.
- (3) Average of columns 2 through 5 excluding negative growth rates.
- (4) This reflects a growth rate component equal to one-half the conclusion of growth rate (from column 6) x column 1 to reflect the periodic payment of dividends (Gordon Model) as opposed to the continuous payment. Thus, for American States Water Co., $1.89\% \times (1 + (1/2 \times 4.88\%)) = 1.94\%$.
- (5) Column 6 + column 7.

Source of Information:

Value Line Investment Survey
www.reuters.com Downloaded on 03/29/2018
www.zacks.com Downloaded on 03/29/2018
www.yahoo.com Downloaded on 03/29/2018

AMERICAN WATER NYSE-AWK				RECENT PRICE	89.08	P/E RATIO	28.1 (Trailing: 30.2 Median: NMF)	RELATIVE P/E RATIO	1.37	DIV'D YLD	2.0%	VALUE LINE																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										
TIMELINESS 2	Raised 11/17/17	High:	23.7	23.0	25.8	32.8	39.4	45.1	56.2	61.2	85.2	92.4	Target Price Range 2020 2021 2022																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
SAFETY 3	New 7/25/08	Low:	16.5	16.2	19.4	25.2	31.3	37.0	41.1	48.4	58.9	70.0																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										
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Due in 5 Yrs \$1698.0 mil. LT Debt \$6672.0 mil. LT Interest \$349.0 mil. (55% of Cap'l) Leases, Uncapitalized: Annual rentals \$14.0 mill. Pension Assets 12/16 \$1443.0 mill. Oblig. \$1864.0 mill. Pfd Stock \$9.0 mill. Pfd Div'd \$ 5 mill. Common Stock 178,375,400 shs as of 10/26/17 </td> </tr> <tr> <td colspan="4">MARKET CAP: \$15.9 billion (Large Cap)</td> <td colspan="14"> <table border="1"> <thead> <tr> <th>2015</th><th>2016</th><th>9/30/17</th> </tr> </thead> <tbody> <tr> <td>2214.2</td><td>2336.9</td><td>2440.7</td> </tr> <tr> <td>d342.3</td><td>187.2</td><td>209.9</td> </tr> <tr> <td>--</td><td>37.4%</td><td>37.9%</td> </tr> <tr> <td>50.9%</td><td>53.1%</td><td>56.9%</td> </tr> <tr> <td>49.1%</td><td>46.9%</td><td>43.1%</td> </tr> <tr> <td>9245.7</td><td>8750.2</td><td>9289.0</td> </tr> <tr> <td>9318.0</td><td>9991.8</td><td>10524</td> </tr> <tr> <td>NMF 3.7%</td><td>3.8%</td><td>4.4%</td> </tr> <tr> <td>NMF 4.6%</td><td>5.2%</td><td>6.5%</td> </tr> <tr> <td>NMF 4.6%</td><td>5.2%</td><td>6.5%</td> </tr> <tr> <td>NMF 3.0%</td><td>1.8%</td><td>2.8%</td> </tr> <tr> <td>--</td><td>34%</td><td>65%</td> </tr> </tbody> </table> </td> </tr> <tr> <td colspan="4">CURRENT POSITION (\$MILL.)</td> <td colspan="14"> <table border="1"> <thead> <tr> <th>2015</th><th>2016</th><th>9/30/17</th> </tr> </thead> <tbody> <tr> <td>45.0</td><td>75.0</td><td>93.0</td> </tr> <tr> <td>255.0</td><td>269.0</td><td>312.0</td> </tr> <tr> <td>357.0</td><td>440.0</td><td>455.0</td> </tr> <tr> <td>657.0</td><td>784.0</td><td>860.0</td> </tr> <tr> <td>126.0</td><td>154.0</td><td>144.0</td> </tr> <tr> <td>682.0</td><td>1423.0</td><td>790.0</td> </tr> <tr> <td>725.0</td><td>815.0</td><td>813.0</td> </tr> <tr> <td>1533.0</td><td>2392.0</td><td>1747.0</td> </tr> </tbody> </table> </td> </tr> <tr> <td colspan="4">ANNUAL RATES OF CHANGE (per sh)</td> <td colspan="14"> <table border="1"> <thead> <tr> <th>Past 10 Yrs.</th><th>Past 5 Yrs.</th><th>Est'd '14-'16</th><th>to '20-'22</th> </tr> </thead> <tbody> <tr> <td>3.0%</td><td>3.5%</td><td>4.5%</td><td>4.5%</td> </tr> <tr> <td>23.0%</td><td>8.5%</td><td>6.5%</td><td>6.5%</td> </tr> <tr> <td>--</td><td>11.0%</td><td>8.5%</td><td>8.5%</td> </tr> <tr> <td>--</td><td>9.0%</td><td>10.0%</td><td>10.0%</td> </tr> <tr> <td>1.5%</td><td>4.0%</td><td>5.5%</td><td>5.5%</td> </tr> </tbody> </table> </td> </tr> <tr> <td colspan="4">QUARTERLY REVENUES (\$ MILL.)</td> <td colspan="14"> <table border="1"> <thead> <tr> <th>Cal-endar</th><th>Mar.31</th><th>Jun.30</th><th>Sep.30</th><th>Dec.31</th><th>Full Year</th> </tr> </thead> <tbody> <tr> <td>2014</td><td>679.0</td><td>754.8</td><td>846.1</td><td>731.4</td><td>3011.3</td> </tr> <tr> <td>2015</td><td>698.0</td><td>782.0</td><td>896.0</td><td>783.0</td><td>3159.0</td> </tr> <tr> <td>2016</td><td>743.0</td><td>827.0</td><td>930.0</td><td>802.0</td><td>3302.0</td> </tr> <tr> <td>2017</td><td>756.0</td><td>844.0</td><td>936.0</td><td>844</td><td>3380</td> </tr> <tr> <td>2018</td><td>770</td><td>895</td><td>1040</td><td>895</td><td>3600</td> </tr> </tbody> </table> </td> </tr> <tr> <td colspan="4">EARNINGS PER SHARE^A</td> <td colspan="14"> <table border="1"> <thead> <tr> <th>Cal-endar</th><th>Mar.31</th><th>Jun.30</th><th>Sep.30</th><th>Dec.31</th><th>Full Year</th> </tr> </thead> <tbody> <tr> <td>2014</td><td>.39</td><td>.62</td><td>.86</td><td>.52</td><td>2.39</td> </tr> <tr> <td>2015</td><td>.44</td><td>.68</td><td>.96</td><td>.56</td><td>2.64</td> </tr> <tr> <td>2016</td><td>.46</td><td>.77</td><td>83</td><td>.57</td><td>2.62</td> </tr> <tr> <td>2017</td><td>.52</td><td>.73</td><td>1.13</td><td>.62</td><td>3.00</td> </tr> <tr> <td>2018</td><td>.58</td><td>.84</td><td>1.19</td><td>.69</td><td>3.30</td> </tr> </tbody> </table> </td> </tr> <tr> <td colspan="4">QUARTERLY DIVIDENDS PAID^B</td> <td colspan="14"> <table border="1"> <thead> <tr> <th>Cal-endar</th><th>Mar.31</th><th>Jun.30</th><th>Sep.30</th><th>Dec.31</th><th>Full Year</th> </tr> </thead> <tbody> <tr> <td>2014</td><td>.28</td><td>.31</td><td>.31</td><td>.31</td><td>1.21</td> </tr> <tr> <td>2015</td><td>.31</td><td>.34</td><td>.34</td><td>.34</td><td>1.33</td> </tr> <tr> <td>2016</td><td>.34</td><td>.375</td><td>.375</td><td>.375</td><td>1.47</td> </tr> <tr> <td>2017</td><td>.375</td><td>.415</td><td>.415</td><td>.415</td><td>1.62</td> </tr> <tr> <td>2018</td><td></td><td></td><td></td><td></td><td></td> </tr> </tbody> </table> </td> </tr> <tr> <td colspan="4">BUSINESS: American Water Works Company, Inc. is the largest investor-owned water and wastewater utility in the U.S., providing services to over 15 million people in over 47 states and Canada. (Regulated presence in 16 states.) Nonregulated business assists municipalities and military bases with the maintenance and upkeep as well. Regulated operations made up 86.5% of 2016 revenues.</td> <td colspan="14"> New Jersey is its largest market accounting for 25.4% of regulated revenues. Has 6,800 employees. The Vanguard Group, owns 9.6% of outstanding shares; BlackRock, Inc., 8.2%; officers & directors, less than 1.0% (3/17 Proxy). President & CEO: Susan N. Story, Chair.; George MacKenzie. Address: 1025 Laurel Oak Road, Voorhees, NJ 08043. Tel.: 856-346-8200. Internet: www.amwater.com. </td> </tr> <tr> <td colspan="4">American Water Works' prospects are bright. In a December investor presentation, management stated once again that the in-house target for annual growth over the next five-year period for both earnings and dividends is at the high end of the 7% to 10% range. This is well above the projected industry average.</td> <td colspan="14"> Acquisitions and cost controls will likely remain the twin pillars of the utility's operating strategy. The water industry in the United States is very fragmented and inefficient. As a result, there are many small and midsize water authorities that do not have the funds required to make the necessary upgrades to their aging water facilities. Hence, American Water has a continual pipeline of purchases in the works. The company is able to integrate these new additions into its asset base while achieving substantial cost savings. Moreover, regulators are happy (more below) when utilities can provide better service at a lower price. </td> </tr> <tr> <td colspan="4">Regulators will probably have a major say in the company's future performance. As the utility continues to expand, its relationship with different state water</td> <td colspan="14"> authorities should become even more important as it will have to file more rate cases. On the positive side of the ledger, American Water's internal (non-GAAP) operating expense margin continues to decline. Indeed, the ratio has decreased from 44% in 2010 to about 34% this year. The goal is 32.5% by 2020-2022. In any case, being able to quantify savings keeps a utility in the good graces of those ruling on rate filings. </td> </tr> <tr> <td colspan="4">The capital budget has been raised substantially. Even though the company is already in the midst of a major construction program, management just increased the estimated outlays by about \$1 billion to bring the new expected five-year total to somewhere between \$8.0 billion and \$8.6 billion. American Water's finances are average, and probably will remain so for the next several years.</td> <td colspan="14"> These timely shares will most likely not interest long-term investors. AWK has outperformed the broader market averages, of late. Indeed, the stock recently traded above our projected 2020-2022 Target Price Range. </td> </tr> <tr> <td colspan="4"></td> <td colspan="14"> <i>James A. Flood</i> <i>January 12, 2018</i> </td> </tr> </tbody> </table>													2001	2002	2003	2004	2005	2006	2007 ^E	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	© VALUE LINE PUB. LLC	20-22	--	--	--	--	--	13.08	13.84	14.61	13.98	15.49	15.18	16.25	16.28	16.78	17.72	18.54	18.95	20.10	Revenues per sh	23.05	--	--	--	--	--	.65	d 47	2.87	2.89	3.56	3.73	4.27	4.36	4.75	5.13	5.26	5.80	6.20	"Cash Flow" per sh	7.50	--	--	--	--	--	d 97	d 2.14	1.10	1.25	1.53	1.72	2.11	2.06	2.39	2.64	2.62	3.00	3.30	Earnings per sh ^A	4.15	--	--	--	--	--	--	--	40	.82	.86	.90	1.21	.84	1.21	1.33	1.47	1.62	1.78	Div'd Decl'd per sh ^B	2.35	--	--	--	--	--	4.31	4.74	6.31	4.50	4.38	5.27	5.25	5.50	5.33	6.51	7.36	7.20	7.25	Cap'l Spending per sh	6.85	--	--	--	--	--	23.86	28.39	25.64	22.91	23.59	24.11	25.11	26.52	27.39	28.25	29.24	30.90	32.40	Book Value per sh ^D	39.45	--	--	--	--	--	160.00	160.00	160.00	174.63	175.00	175.66	176.99	178.25	179.46	178.28	178.10	178.50	179.00	Common Shs Outst'g ^C	187.50	--	--	--	--	--	--	18.9	15.6	14.6	16.8	16.7	19.9	20.0	20.5	27.7	26.8	26.8	26.8	Avg Ann'l P/E Ratio	18.0	--	--	--	--	--	--	1.14	1.04	.93	1.05	1.06	1.12	1.05	1.03	1.46	1.31	1.31	1.31	Relative P/E Ratio	1.15	--	--	--	--	--	--	1.9%	4.2%	3.8%	3.1%	3.4%	2.0%	2.5%	2.5%	2.0%	2.0%	2.0%	2.0%	Avg Ann'l Div'd Yield	3.1%	CAPITAL STRUCTURE as of 9/30/17				Total Debt \$7462.0 mil. 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Common Stock 178,375,400 shs as of 10/26/17														MARKET CAP: \$15.9 billion (Large Cap)				<table border="1"> <thead> <tr> <th>2015</th><th>2016</th><th>9/30/17</th> </tr> </thead> <tbody> <tr> <td>2214.2</td><td>2336.9</td><td>2440.7</td> </tr> <tr> <td>d342.3</td><td>187.2</td><td>209.9</td> </tr> <tr> <td>--</td><td>37.4%</td><td>37.9%</td> </tr> <tr> <td>50.9%</td><td>53.1%</td><td>56.9%</td> </tr> <tr> <td>49.1%</td><td>46.9%</td><td>43.1%</td> </tr> <tr> <td>9245.7</td><td>8750.2</td><td>9289.0</td> </tr> <tr> <td>9318.0</td><td>9991.8</td><td>10524</td> </tr> <tr> <td>NMF 3.7%</td><td>3.8%</td><td>4.4%</td> </tr> <tr> <td>NMF 4.6%</td><td>5.2%</td><td>6.5%</td> </tr> <tr> <td>NMF 4.6%</td><td>5.2%</td><td>6.5%</td> </tr> <tr> <td>NMF 3.0%</td><td>1.8%</td><td>2.8%</td> </tr> <tr> <td>--</td><td>34%</td><td>65%</td> </tr> </tbody> </table>														2015	2016	9/30/17	2214.2	2336.9	2440.7	d342.3	187.2	209.9	--	37.4%	37.9%	50.9%	53.1%	56.9%	49.1%	46.9%	43.1%	9245.7	8750.2	9289.0	9318.0	9991.8	10524	NMF 3.7%	3.8%	4.4%	NMF 4.6%	5.2%	6.5%	NMF 4.6%	5.2%	6.5%	NMF 3.0%	1.8%	2.8%	--	34%	65%	CURRENT POSITION (\$MILL.)				<table border="1"> <thead> <tr> <th>2015</th><th>2016</th><th>9/30/17</th> </tr> </thead> <tbody> <tr> <td>45.0</td><td>75.0</td><td>93.0</td> </tr> <tr> <td>255.0</td><td>269.0</td><td>312.0</td> </tr> <tr> <td>357.0</td><td>440.0</td><td>455.0</td> </tr> <tr> <td>657.0</td><td>784.0</td><td>860.0</td> </tr> <tr> <td>126.0</td><td>154.0</td><td>144.0</td> </tr> <tr> <td>682.0</td><td>1423.0</td><td>790.0</td> </tr> <tr> <td>725.0</td><td>815.0</td><td>813.0</td> </tr> <tr> <td>1533.0</td><td>2392.0</td><td>1747.0</td> </tr> </tbody> </table>														2015	2016	9/30/17	45.0	75.0	93.0	255.0	269.0	312.0	357.0	440.0	455.0	657.0	784.0	860.0	126.0	154.0	144.0	682.0	1423.0	790.0	725.0	815.0	813.0	1533.0	2392.0	1747.0	ANNUAL RATES OF CHANGE (per sh)				<table border="1"> <thead> <tr> <th>Past 10 Yrs.</th><th>Past 5 Yrs.</th><th>Est'd '14-'16</th><th>to '20-'22</th> </tr> </thead> <tbody> <tr> <td>3.0%</td><td>3.5%</td><td>4.5%</td><td>4.5%</td> </tr> <tr> <td>23.0%</td><td>8.5%</td><td>6.5%</td><td>6.5%</td> </tr> <tr> <td>--</td><td>11.0%</td><td>8.5%</td><td>8.5%</td> </tr> <tr> <td>--</td><td>9.0%</td><td>10.0%</td><td>10.0%</td> </tr> <tr> <td>1.5%</td><td>4.0%</td><td>5.5%</td><td>5.5%</td> </tr> </tbody> </table>														Past 10 Yrs.	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Est'd '14-'16	to '20-'22	3.0%	3.5%	4.5%	4.5%	23.0%	8.5%	6.5%	6.5%	--	11.0%	8.5%	8.5%	--	9.0%	10.0%	10.0%	1.5%	4.0%	5.5%	5.5%	QUARTERLY REVENUES (\$ MILL.)				<table border="1"> <thead> <tr> <th>Cal-endar</th><th>Mar.31</th><th>Jun.30</th><th>Sep.30</th><th>Dec.31</th><th>Full Year</th> </tr> </thead> <tbody> <tr> <td>2014</td><td>679.0</td><td>754.8</td><td>846.1</td><td>731.4</td><td>3011.3</td> </tr> <tr> <td>2015</td><td>698.0</td><td>782.0</td><td>896.0</td><td>783.0</td><td>3159.0</td> </tr> <tr> <td>2016</td><td>743.0</td><td>827.0</td><td>930.0</td><td>802.0</td><td>3302.0</td> </tr> <tr> <td>2017</td><td>756.0</td><td>844.0</td><td>936.0</td><td>844</td><td>3380</td> </tr> <tr> <td>2018</td><td>770</td><td>895</td><td>1040</td><td>895</td><td>3600</td> </tr> </tbody> </table>														Cal-endar	Mar.31	Jun.30	Sep.30	Dec.31	Full Year	2014	679.0	754.8	846.1	731.4	3011.3	2015	698.0	782.0	896.0	783.0	3159.0	2016	743.0	827.0	930.0	802.0	3302.0	2017	756.0	844.0	936.0	844	3380	2018	770	895	1040	895	3600	EARNINGS PER SHARE^A				<table border="1"> <thead> <tr> <th>Cal-endar</th><th>Mar.31</th><th>Jun.30</th><th>Sep.30</th><th>Dec.31</th><th>Full Year</th> </tr> </thead> <tbody> <tr> <td>2014</td><td>.39</td><td>.62</td><td>.86</td><td>.52</td><td>2.39</td> </tr> <tr> <td>2015</td><td>.44</td><td>.68</td><td>.96</td><td>.56</td><td>2.64</td> </tr> <tr> <td>2016</td><td>.46</td><td>.77</td><td>83</td><td>.57</td><td>2.62</td> </tr> <tr> <td>2017</td><td>.52</td><td>.73</td><td>1.13</td><td>.62</td><td>3.00</td> </tr> <tr> <td>2018</td><td>.58</td><td>.84</td><td>1.19</td><td>.69</td><td>3.30</td> </tr> </tbody> </table>														Cal-endar	Mar.31	Jun.30	Sep.30	Dec.31	Full Year	2014	.39	.62	.86	.52	2.39	2015	.44	.68	.96	.56	2.64	2016	.46	.77	83	.57	2.62	2017	.52	.73	1.13	.62	3.00	2018	.58	.84	1.19	.69	3.30	QUARTERLY DIVIDENDS PAID^B				<table border="1"> <thead> <tr> <th>Cal-endar</th><th>Mar.31</th><th>Jun.30</th><th>Sep.30</th><th>Dec.31</th><th>Full Year</th> </tr> </thead> <tbody> <tr> <td>2014</td><td>.28</td><td>.31</td><td>.31</td><td>.31</td><td>1.21</td> </tr> <tr> <td>2015</td><td>.31</td><td>.34</td><td>.34</td><td>.34</td><td>1.33</td> </tr> <tr> <td>2016</td><td>.34</td><td>.375</td><td>.375</td><td>.375</td><td>1.47</td> </tr> <tr> <td>2017</td><td>.375</td><td>.415</td><td>.415</td><td>.415</td><td>1.62</td> </tr> <tr> <td>2018</td><td></td><td></td><td></td><td></td><td></td> </tr> </tbody> </table>														Cal-endar	Mar.31	Jun.30	Sep.30	Dec.31	Full Year	2014	.28	.31	.31	.31	1.21	2015	.31	.34	.34	.34	1.33	2016	.34	.375	.375	.375	1.47	2017	.375	.415	.415	.415	1.62	2018						BUSINESS: American Water Works Company, Inc. is the largest investor-owned water and wastewater utility in the U.S., providing services to over 15 million people in over 47 states and Canada. (Regulated presence in 16 states.) Nonregulated business assists municipalities and military bases with the maintenance and upkeep as well. Regulated operations made up 86.5% of 2016 revenues.				New Jersey is its largest market accounting for 25.4% of regulated revenues. Has 6,800 employees. The Vanguard Group, owns 9.6% of outstanding shares; BlackRock, Inc., 8.2%; officers & directors, less than 1.0% (3/17 Proxy). President & CEO: Susan N. Story, Chair.; George MacKenzie. Address: 1025 Laurel Oak Road, Voorhees, NJ 08043. Tel.: 856-346-8200. Internet: www.amwater.com.														American Water Works' prospects are bright. In a December investor presentation, management stated once again that the in-house target for annual growth over the next five-year period for both earnings and dividends is at the high end of the 7% to 10% range. This is well above the projected industry average.				Acquisitions and cost controls will likely remain the twin pillars of the utility's operating strategy. The water industry in the United States is very fragmented and inefficient. As a result, there are many small and midsize water authorities that do not have the funds required to make the necessary upgrades to their aging water facilities. Hence, American Water has a continual pipeline of purchases in the works. The company is able to integrate these new additions into its asset base while achieving substantial cost savings. Moreover, regulators are happy (more below) when utilities can provide better service at a lower price.														Regulators will probably have a major say in the company's future performance. As the utility continues to expand, its relationship with different state water				authorities should become even more important as it will have to file more rate cases. On the positive side of the ledger, American Water's internal (non-GAAP) operating expense margin continues to decline. Indeed, the ratio has decreased from 44% in 2010 to about 34% this year. The goal is 32.5% by 2020-2022. In any case, being able to quantify savings keeps a utility in the good graces of those ruling on rate filings.														The capital budget has been raised substantially. Even though the company is already in the midst of a major construction program, management just increased the estimated outlays by about \$1 billion to bring the new expected five-year total to somewhere between \$8.0 billion and \$8.6 billion. American Water's finances are average, and probably will remain so for the next several years.				These timely shares will most likely not interest long-term investors. AWK has outperformed the broader market averages, of late. Indeed, the stock recently traded above our projected 2020-2022 Target Price Range.																		<i>James A. Flood</i> <i>January 12, 2018</i>													
2001	2002	2003	2004	2005	2006	2007 ^E	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	© VALUE LINE PUB. LLC	20-22																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
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CAPITAL STRUCTURE as of 9/30/17				Total Debt \$7462.0 mil. Due in 5 Yrs \$1698.0 mil. LT Debt \$6672.0 mil. LT Interest \$349.0 mil. (55% of Cap'l) Leases, Uncapitalized: Annual rentals \$14.0 mill. Pension Assets 12/16 \$1443.0 mill. Oblig. \$1864.0 mill. Pfd Stock \$9.0 mill. Pfd Div'd \$ 5 mill. Common Stock 178,375,400 shs as of 10/26/17																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																		
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ANNUAL RATES OF CHANGE (per sh)				<table border="1"> <thead> <tr> <th>Past 10 Yrs.</th><th>Past 5 Yrs.</th><th>Est'd '14-'16</th><th>to '20-'22</th> </tr> </thead> <tbody> <tr> <td>3.0%</td><td>3.5%</td><td>4.5%</td><td>4.5%</td> </tr> <tr> <td>23.0%</td><td>8.5%</td><td>6.5%</td><td>6.5%</td> </tr> <tr> <td>--</td><td>11.0%</td><td>8.5%</td><td>8.5%</td> </tr> <tr> <td>--</td><td>9.0%</td><td>10.0%</td><td>10.0%</td> </tr> <tr> <td>1.5%</td><td>4.0%</td><td>5.5%</td><td>5.5%</td> </tr> </tbody> </table>														Past 10 Yrs.	Past 5 Yrs.	Est'd '14-'16	to '20-'22	3.0%	3.5%	4.5%	4.5%	23.0%	8.5%	6.5%	6.5%	--	11.0%	8.5%	8.5%	--	9.0%	10.0%	10.0%	1.5%	4.0%	5.5%	5.5%																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													
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QUARTERLY REVENUES (\$ MILL.)				<table border="1"> <thead> <tr> <th>Cal-endar</th><th>Mar.31</th><th>Jun.30</th><th>Sep.30</th><th>Dec.31</th><th>Full Year</th> </tr> </thead> <tbody> <tr> <td>2014</td><td>679.0</td><td>754.8</td><td>846.1</td><td>731.4</td><td>3011.3</td> </tr> <tr> <td>2015</td><td>698.0</td><td>782.0</td><td>896.0</td><td>783.0</td><td>3159.0</td> </tr> <tr> <td>2016</td><td>743.0</td><td>827.0</td><td>930.0</td><td>802.0</td><td>3302.0</td> </tr> <tr> <td>2017</td><td>756.0</td><td>844.0</td><td>936.0</td><td>844</td><td>3380</td> </tr> <tr> <td>2018</td><td>770</td><td>895</td><td>1040</td><td>895</td><td>3600</td> </tr> </tbody> </table>														Cal-endar	Mar.31	Jun.30	Sep.30	Dec.31	Full Year	2014	679.0	754.8	846.1	731.4	3011.3	2015	698.0	782.0	896.0	783.0	3159.0	2016	743.0	827.0	930.0	802.0	3302.0	2017	756.0	844.0	936.0	844	3380	2018	770	895	1040	895	3600																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
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BUSINESS: American Water Works Company, Inc. is the largest investor-owned water and wastewater utility in the U.S., providing services to over 15 million people in over 47 states and Canada. (Regulated presence in 16 states.) Nonregulated business assists municipalities and military bases with the maintenance and upkeep as well. Regulated operations made up 86.5% of 2016 revenues.				New Jersey is its largest market accounting for 25.4% of regulated revenues. Has 6,800 employees. The Vanguard Group, owns 9.6% of outstanding shares; BlackRock, Inc., 8.2%; officers & directors, less than 1.0% (3/17 Proxy). President & CEO: Susan N. Story, Chair.; George MacKenzie. Address: 1025 Laurel Oak Road, Voorhees, NJ 08043. Tel.: 856-346-8200. Internet: www.amwater.com.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																		
American Water Works' prospects are bright. In a December investor presentation, management stated once again that the in-house target for annual growth over the next five-year period for both earnings and dividends is at the high end of the 7% to 10% range. This is well above the projected industry average.				Acquisitions and cost controls will likely remain the twin pillars of the utility's operating strategy. The water industry in the United States is very fragmented and inefficient. As a result, there are many small and midsize water authorities that do not have the funds required to make the necessary upgrades to their aging water facilities. Hence, American Water has a continual pipeline of purchases in the works. The company is able to integrate these new additions into its asset base while achieving substantial cost savings. Moreover, regulators are happy (more below) when utilities can provide better service at a lower price.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																		
Regulators will probably have a major say in the company's future performance. As the utility continues to expand, its relationship with different state water				authorities should become even more important as it will have to file more rate cases. On the positive side of the ledger, American Water's internal (non-GAAP) operating expense margin continues to decline. Indeed, the ratio has decreased from 44% in 2010 to about 34% this year. The goal is 32.5% by 2020-2022. In any case, being able to quantify savings keeps a utility in the good graces of those ruling on rate filings.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																		
The capital budget has been raised substantially. Even though the company is already in the midst of a major construction program, management just increased the estimated outlays by about \$1 billion to bring the new expected five-year total to somewhere between \$8.0 billion and \$8.6 billion. American Water's finances are average, and probably will remain so for the next several years.				These timely shares will most likely not interest long-term investors. AWK has outperformed the broader market averages, of late. Indeed, the stock recently traded above our projected 2020-2022 Target Price Range.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																		
				<i>James A. Flood</i> <i>January 12, 2018</i>																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																		

(A) Diluted earnings. Excludes nonrecurring losses: '08, \$4.62; '09, \$2.63; '11, \$0.07. Discontinued operations: '06, (\$0.04); '11, \$0.03; '12, (\$0.10); '13, (\$0.01). GAAP used as of 2014. Next earnings report due mid-February. Quarterly earnings do not sum in '16 due to rounding. (B) Dividends paid in March, June, September, and December. (C) Div. reinvest-ment available. (D) Includes intangibles. On 9/30/17: \$1.373 billion, \$7.70/share. (E) Pro forma numbers for '06 & '07.

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Company's Financial Strength	B+
Stock's Price Stability	100
Price Growth Persistence	85
Earnings Predictability	90

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AQUA AMERICA NYSE-WTR		RECENT PRICE	38.65	P/E RATIO	27.4 (Trailing: 29.1 Median: 22.0)	RELATIVE P/E RATIO	1.34	DIV'D YLD	2.2%	VALUE LINE										
TIMELINESS	2 Raised 11/17/17	High: 23.8	21.3	17.6	17.2	18.4	19.0	21.5	28.1	28.2	31.1	35.8	39.6	Target Price Range						
SAFETY	2 Raised 4/20/12	Low: 16.1	15.1	9.8	12.3	13.2	15.4	16.8	20.6	22.4	24.4	28.0	29.4	2020	2021	2022				
TECHNICAL	3 Lowered 1/5/18	LEGENDS 1.60 x Dividends p sh divided by Interest Rate Relative Price Strength 4-for-3 split 12/05 5-for-4 split 9/13 Options: Yes Shaded area indicates recession										80								
BETA	.75 (1.00 = Market)											7.5								
2020-22 PROJECTIONS		Price	Gain	Ann'l Total Return											% TOT. RETURN 12/17 THIS STOCK VLARITH INDEX 1 yr. 33.8 15.8 3 yr. 58.1 30.1 5 yr. 118.0 92.5					
High	45 (+15%)	6%																		
Low	35 (-10%)	Nil																		
Insider Decisions		M	A	M	J	J	A	S	O	N										
to Buy	0	0	0	0	0	0	0	0	0	0										
Options	7	7	0	1	0	1	8	0												
to Sell	0	0	0	2	0	0	1	0												
Institutional Decisions		1Q2017	2Q2017	3Q2017																
to Buy	179	172	187																	
to Sell	180	155	120																	
Hld's(000)	103594	104564	105796																	
		Percent shares traded	15	10																
			5	10																
2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	© VALUE LINE PUB. LLC	20-22	
2.16	2.28	2.38	2.78	3.08	3.23	3.61	3.71	3.93	4.21	4.10	4.32	4.32	4.37	4.61	4.62	4.50	4.70	Revenues per sh	6.05	
.69	.76	.77	.87	.97	1.01	1.10	1.14	1.29	1.42	1.45	1.51	1.82	1.89	1.87	2.07	2.15	2.25	"Cash Flow" per sh	2.75	
.41	.43	.46	.51	.57	.56	.57	.58	.62	.72	.83	.87	1.16	1.20	1.14	1.32	1.36	1.45	Earnings per sh ^A	1.85	
.24	.26	.28	.29	.32	.35	.38	.41	.44	.47	.50	.54	.58	.63	.69	.74	.79	.85	Div'd Decl'd per sh ^B	1.15	
.87	.96	1.06	1.23	1.47	1.64	1.43	1.58	1.66	1.89	1.90	1.98	1.73	1.84	2.07	2.16	2.55	2.45	Cap'l Spending per sh	2.25	
3.32	3.49	4.27	4.71	5.04	5.57	5.85	6.26	6.50	6.81	7.21	7.90	8.63	9.27	9.78	10.43	11.10	11.75	Book Value per sh	14.85	
142.47	141.49	154.31	158.97	161.21	165.41	166.75	169.21	170.61	172.46	173.60	175.43	177.93	178.59	176.54	177.39	178.00	178.50	Common Shs Outst'g ^C	180.00	
23.6	23.6	24.5	25.1	31.8	34.7	32.0	24.9	23.1	21.1	21.3	21.9	21.2	20.8	23.5	23.9	24.5		Avg Ann'l P/E Ratio	21.0	
1.21	1.29	1.40	1.33	1.69	1.87	1.70	1.50	1.54	1.34	1.34	1.39	1.19	1.09	1.18	1.26	1.20		Relative P/E Ratio	1.30	
2.5%	2.5%	2.5%	2.3%	1.8%	1.8%	2.1%	2.8%	3.1%	3.1%	2.8%	2.8%	2.4%	2.5%	2.6%	2.3%	2.4%		Avg Ann'l Div'd Yield	2.9%	
CAPITAL STRUCTURE as of 9/30/17				602.5	627.0	670.5	726.1	712.0	757.8	768.6	779.9	814.2	819.9	800	840	840	840	840	Revenues (\$mill)	1085
Total Debt \$2058.2 mill. Due in 5 Yrs \$430.5 mill.				95.0	97.9	104.4	124.0	144.8	153.1	205.0	213.9	201.8	234.2	245	260	260	260	260	Net Profit (\$mill)	335
LT Debt \$1952.5 mill. LT Interest \$80.0 mill. (50% of Cap'l)				38.9%	39.7%	39.4%	39.2%	32.9%	39.0%	10.0%	10.5%	6.9%	8.2%	9.0%	9.0%	9.0%	9.0%	9.0%	Income Tax Rate	10.0%
				--	--	--	--	--	--	1.1%	2.4%	3.1%	3.8%	3.5%	3.0%	3.0%	3.0%	AFUDC % to Net Profit	3.5%	
Pension Assets-12/16 \$242.4 mill				55.4%	54.1%	55.6%	56.6%	52.7%	52.7%	48.9%	48.5%	50.3%	48.4%	47.0%	49.0%	49.0%	49.0%	49.0%	Long-Term Debt Ratio	51.0%
Oblig. \$308.2 mill.				44.6%	45.9%	44.4%	43.4%	47.3%	47.3%	51.1%	51.5%	49.7%	51.6%	53.0%	51.0%	51.0%	51.0%	51.0%	Common Equity Ratio	49.0%
Pfd Stock None				2191.4	2306.6	2495.5	2706.2	2646.8	2929.7	3003.6	3216.0	3469.5	3587.7	3735	4100	4100	4100	4100	Total Capital (\$mill)	5500
Common Stock 177,690,598 shares as of 10/20/17				2792.8	2997.4	3227.3	3469.3	3612.9	3936.2	4167.3	4402.0	4688.9	5001.6	5080	5275	5275	5275	5275	Net Plant (\$mill)	5800
				5.9%	5.7%	5.6%	5.9%	6.9%	6.6%	8.0%	7.8%	6.9%	7.6%	7.5%	7.5%	7.5%	7.5%	Return on Total Cap'l	7.5%	
				9.7%	9.3%	9.4%	10.6%	11.6%	11.0%	13.4%	12.9%	11.7%	12.7%	12.5%	12.5%	12.5%	12.5%	12.5%	Return on Shr. Equity	12.5%
				9.7%	9.3%	9.4%	10.6%	11.6%	11.0%	13.4%	12.9%	11.7%	12.7%	12.5%	12.5%	12.5%	12.5%	12.5%	Return on Com Equity	12.5%
MARKET CAP: \$6.9 billion (Large Cap)				3.2%	2.8%	2.7%	3.7%	4.6%	4.3%	6.7%	6.1%	4.7%	5.6%	5.5%	5.0%	5.0%	5.0%	5.0%	Retained to Com Eq	4.5%
CURRENT POSITION (\$MILL)				67%	70%	72%	65%	60%	61%	50%	52%	60%	56%	58%	59%	59%	59%	59%	All Div'ds to Net Prof	62%
Cash Assets				3.2	3.7	4.1														
Receivables				99.1	97.4	104.9														
Inventory (AvgCst)				12.4	13.0	16.6														
Other				13.7	14.6	12.7														
Current Assets				128.4	128.7	138.3														
Accts Payable				56.5	59.9	63.4														
Debt Due				52.3	157.2	105.7														
Other				84.4	84.4	83.9														
Current Liab.				193.2	301.5	253.0														
ANNUAL RATES				Past 10 Yrs.	Past 5 Yrs.	Est'd '14-'16 to '20-'22														
of change (per sh)				4.0%	2.0%	5.0%														
Revenues				7.5%	7.0%	6.0%														
"Cash Flow"				8.5%	11.0%	7.0%														
Earnings				8.0%	8.0%	9.0%														
Dividends				7.0%	7.5%	6.5%														
Book Value																				
Cal-endar	QUARTERLY REVENUES (\$mill.)				Full Year															
	Mar.31	Jun.30	Sep.30	Dec.31																
2014	182.7	195.3	210.5	191.4	779.9															
2015	190.3	205.8	221.0	197.1	814.2															
2016	192.6	203.9	226.6	196.8	819.9															
2017	187.8	203.4	215.0	193.8	800															
2018	195	215	225	205	840															
Cal-endar	EARNINGS PER SHARE ^A				Full Year															
	Mar.31	Jun.30	Sep.30	Dec.31																
2014	.24	.31	.38	.27	1.20															
2015	.27	.32	.38	.17	1.14															
2016	.29	.34	.41	.28	1.32															
2017	.28	.34	.43	.31	1.36															
2018	.30	.37	.46	.32	1.45															
Cal-endar	QUARTERLY DIVIDENDS PAID ^B				Full Year															
	Mar.31	Jun.30	Sep.30	Dec.31																
2014	.152	.152	.165	.165	.63															
2015	.165	.165	.178	.178	.69															
2016	.178	.178	.1913	.1913	.74															
2017	.1913	.1913	.2047	.2047	.79															
2018																				

BUSINESS: Aqua America, Inc. is the holding company for water and wastewater utilities that serve approximately three million residents in Pennsylvania, Ohio, North Carolina, Illinois, Texas, New Jersey, Florida, Indiana, and five other states. Has 1,551 employees. Acquired AquaSource, 7/13; North Maine Utilities, 7/15; and others. Water supply revenues '2016: residential, 59%; commercial, 16%; industrial, wastewater & other, 25%. Off & dir. own less than 1% of the common stock; Vanguard Group, 8.9%; Blackrock, Inc., 8.1%; State Street Capital, 6.0% (3/17 Proxy). President & Chief Executive Officer: Christopher Franklin. Incorporated: Pennsylvania. Address: 762 West Lancaster Avenue, Bryn Mawr, Pennsylvania 19010. Tel: 610-525-1400. Internet: www.aquaamerica.com.

Our earnings estimates for Aqua America remain unchanged. But we have lowered our revenue forecast for both last year's fourth quarter and 2018 as water sales have been declining. On the positive side, the water utility's operating expenses have been decreasing at a higher rate thanks to lower power and chemical costs. Indeed, we think Aqua's 2017 share net came in at \$1.36, versus 2016's tough \$1.32 comparison. Rate relief granted by several states over the past 12 months will be in effect all of this year. This, plus expected new hikes in Virginia and Indiana, should enable Aqua's share earning to climb a healthy 7%, to \$1.45.

Acquisitions are being made at a modest pace. Due to the fragmentation in the market (there are over 100,000 separate water districts in the U.S.), large-cap water utilities such as Aqua are continuously buying small water entities. Also, most of these authorities do not have the funds required to replace and upgrade their aging network of pipes and waste systems. Not only do the bigger water entities have the funds available for the needed capital outlays, they are also able to realize significant cost saving because the industry is rife with redundancies. The company's acquisitions made through September of last year combined with organic growth, led to only a 0.8% increase in the customer base. Management has targeted annual growth to be approximately 1.5%-2.0%, so we expect the pace to possible accelerate here.

Aqua has a healthy balance sheet. Of the nine members in this group, only two merit an "A" Financial Strength rating. This leaves the company with the capacity to borrow to buy more water assets. In addition, Aqua's policy of hardly issuing any new equity is a real positive. With the stock near its all-time high, a new equity offering would probably be well received, as institutional demand for large-cap water utilities stock remains strong.

These shares are timely. Also, even though WTR's long-term total return potential isn't great, it is more attractive than most other mid- and large-cap stocks in this group. So, investors that must own a water utility equity may find WTR of interest.

James A. Flood
January 12, 2018

(A) Diluted eqs. Excl. nonrec. gains: '01, 2¢; '02, 4¢; '03, 3¢; '12, 18¢. Excl. gain from disc. operations: '12, 7¢; '13, 9¢; '14, 11¢. May not sum due to rounding. Next earnings report due mid-February.
(B) Dividends historically paid in early March, June, Sept. & Dec. ■ Div'd reinvestment plan available (5% discount).
(C) In millions, adjusted for stock splits.

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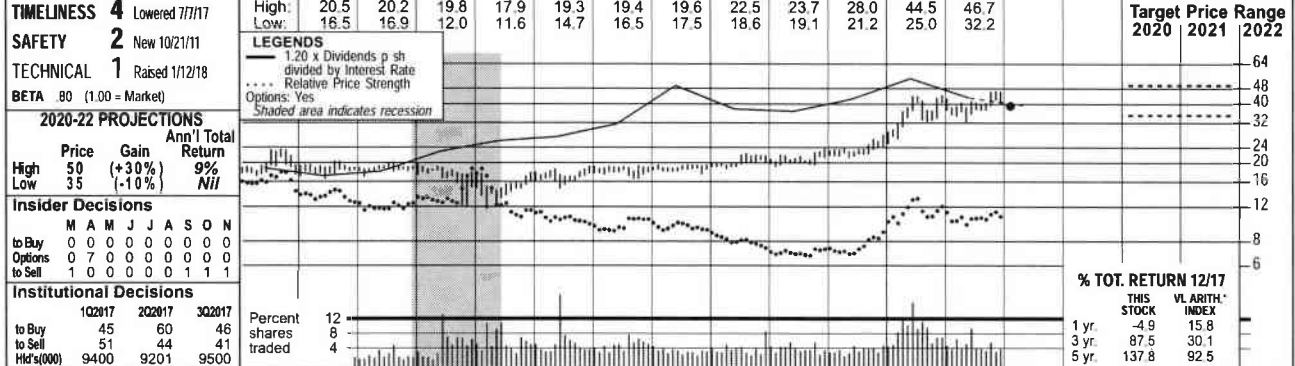
Company's Financial Strength	A
Stock's Price Stability	95
Price Growth Persistence	65
Earnings Predictability	90

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CALIFORNIA WATER NYSE-CWT		RECENT PRICE	44.70	P/E RATIO	30.0 (Trailing: 31.5 Median: 20.0)	RELATIVE P/E RATIO	1.46	DIV'D YLD	1.6%	VALUE LINE																																		
TIMELINESS 2 Raised 9/1/17	High: 22.9 22.7 23.3 24.1 19.8 19.4 19.3 23.4 26.4	Low: 16.4 17.1 13.8 16.7 16.9 16.7 16.8 18.4 20.3	26.0 36.8 46.2	19.5 22.5 32.4	Target Price Range	2020 2021 2022	64 48 40 32 24 20 16 12 8 6																																					
SAFETY 3 Lowered 7/27/07	LEGENDS 1.33 x Dividends p sh divided by Interest Rate Relative Price Strength 2-for-1 split 6/11 Options: Yes Shaded area indicates recession																																											
TECHNICAL 2 Raised 12/22/17	2020-22 PROJECTIONS		High	50	Gain (+10%)	5%	Ann'l Total Return	5%	Low	35	(-2.0%)	-4%																																
BETA 80 (1.00 = Market)	Insider Decisions		M A M J J A S O N		to Buy 1 1 1 1 1 1 1 1 1 1		Options 22 0 0 0 0 0 0 0 1		to Sell 1 0 1 1 0 0 1 0 0		Institutional Decisions																																	
	1Q2017 2Q2017 3Q2017		to Buy 97 88 80		to Sell 83 77 71		Hld's(000) 38886 38422 38931		Percent shares traded		18 12 6																																	
	2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016 2017 2018		© VALUE LINE PUB. LLC		20-22																																							
	8.13 1.10 .47 .56	8.67 1.32 .63 .56	8.18 1.26 .61 .57	8.59 1.42 .73 .57	8.72 1.52 .74 .57	8.10 1.36 .67 .58	8.88 1.56 .75 .58	9.90 1.86 .95 .59	10.82 1.93 .98 .59	11.05 1.93 .91 .60	12.00 2.07 .86 .62	13.34 2.32 1.02 .63	12.23 2.21 1.02 .64	12.50 2.47 1.19 .65	12.29 2.22 .94 .67	12.70 2.34 1.01 .69	13.70 2.70 1.40 1.55	14.10 2.90 1.65 1.75	Revenues per sh	15.00	"Cash Flow" per sh	3.25	Earnings per sh ^A	1.85	Div'd Decl'd per sh ^B	1.02																		
	2.04 6.48 30.36	2.91 6.56 30.36	2.19 7.22 33.86	1.87 7.83 36.73	2.01 7.90 36.78	2.14 9.07 41.31	1.84 9.25 41.33	2.41 9.72 41.45	2.66 10.13 41.53	2.97 10.45 41.67	2.83 10.76 41.82	3.04 11.28 41.98	2.58 12.54 47.74	2.76 13.11 47.81	3.69 13.41 47.88	4.77 13.75 47.97	3.85 14.30 48.25	3.65 14.75 48.50	Cap'l Spending per sh	3.65	Book Value per sh ^C	16.50	Common Shs Outstg ^D	50.00	Avg Ann'l P/E Ratio	23.0	Relative P/E Ratio	1.45	Avg Ann'l Div'd Yield	2.4%														
	27.1 1.39 4.4%	19.8 1.08 4.5%	22.1 1.26 4.2%	20.1 1.06 3.9%	24.9 1.33 3.1%	29.2 1.58 2.9%	26.1 1.39 3.0%	19.8 1.19 3.1%	19.7 1.31 3.1%	20.3 1.29 3.2%	21.3 1.34 3.4%	17.9 1.14 3.1%	20.1 1.13 2.8%	19.7 1.04 2.9%	24.8 1.25 2.3%	29.6 1.56 2.3%	26.9 1.31 1.9%	23.0 1.45 2.4%	Revenues (\$mill) ^E	750	Net Profit (\$mill)	93.0	Income Tax Rate	21.0%	AFUDC % to Net Profit	5.0%	Long-Term Debt Ratio	42.0%	Common Equity Ratio	58.0%	Total Capital (\$mill)	1425	Net Plant (\$mill)	2000	Return on Total Cap'l	7.5%	Return on Shr. Equity	11.0%	Return on Com Equity	11.0%	Retained to Com Eq	5.0%	All Div's to Net Prof	55%
	CAPITAL STRUCTURE as of 9/30/17		Total Debt \$750.8 mill. Due in 5 Yrs \$174.0 mill.		LT Debt \$519.7 mill. LT Interest \$35.0 mill. (44% of Cap'l)		367.1 410.3 449.4 460.4 501.8 560.0 584.1 597.5 588.3 609.4 660 685		31.2 39.8 40.6 37.7 36.1 42.6 47.3 56.7 45.0 48.7 68.0 75.0		39.9% 37.7% 40.3% 39.5% 40.5% 37.5% 30.3% 33.0% 36.0% 35.5% 35.0% 21.0%		8.3% 8.6% 7.6% 4.2% 7.6% 8.0% 4.3% 2.7% 4.3% 6.1% 5.0% 5.0%		42.9% 41.6% 47.1% 52.4% 51.7% 47.8% 41.6% 40.1% 44.4% 44.6% 43.0% 44.5%		56.6% 58.4% 52.9% 47.6% 48.3% 52.2% 58.4% 59.9% 55.6% 55.4% 57.0% 55.5%		674.9 690.4 794.9 914.7 931.5 908.2 1024.9 1045.9 1154.4 1191.2 1215 1290		1010.2 1112.4 1198.1 1294.3 1381.1 1457.1 1515.8 1590.4 1701.8 1859.3 1900 1930		5.9% 7.1% 6.5% 5.5% 5.5% 6.3% 6.0% 6.3% 5.2% 5.5% 6.5% 7.0%		8.1% 9.9% 9.6% 8.6% 8.0% 9.0% 7.9% 9.1% 7.0% 7.4% 10.0% 10.5%		8.1% 9.9% 9.6% 8.6% 8.0% 9.0% 7.9% 9.1% 7.0% 7.4% 10.0% 10.5%		1.8% 3.8% 3.8% 3.0% 2.3% 3.4% 3.4% 4.1% 2.0% 2.4% 4.5% 5.5%		77% 61% 60% 66% 71% 62% 56% 55% 71% 68% 51% 49%		BUSINESS: California Water Service Group provides regulated and nonregulated water service to 482,400 customers in 100 communities in the state of California. Accounts for over 94% of total customers. Also operates in Washington, New Mexico, and Hawaii. Main service areas: San Francisco Bay area, Sacramento Valley, Salinas Valley, San Joaquin Valley & parts of Los Angeles. Acquired Rio Grande Corp; West Hawaii Utilities (9/08). Revenue breakdown: '16: residential, 72%; business, 20%; industrial, 4%; public authorities, 3%; other 1%. Off. and dir. own 1% of common stock (4/17 proxy). Has 1,163 employees. Pres. and CEO: Martin A. Kropelnicki Inc.; DE. Addr: 1720 North First St., San Jose, CA 95112-4598. Tel.: 408-367-8200. Internet: www.calwatergroup.com.											
	Pension Assets-12/16 \$376.5 mill. Oblig. \$564.8 mill.		Pfd Stock None		Common Stock 48,015,000 shs.		MARKET CAP: \$2.1 billion (Mid Cap)		CURRENT POSITION (\$MILL)		2015 2016 9/30/17		Cash Assets 8.8 25.5 28.3		Other 118.8 116.6 152.2		Current Assets 127.6 142.1 180.5		Accts Payable 66.4 77.8 89.4		Debt Due 40.2 123.3 231.1		Other 41.9 49.1 59.9		Current Liab. 148.5 250.2 380.4																			
	ANNUAL RATES Past		10 Yrs. Past Est'd '14-'16		5 Yrs. to '20-'22		Revenues 4.0% 2.0% 3.0%		"Cash Flow" 5.0% 3.5% 5.5%		Earnings 4.0% 3.0% 10.0%		Dividends 1.5% 2.0% 7.5%		Book Value 5.0% 5.0% 3.5%																													
	Cal-endar	QUARTERLY REVENUES (\$ mill.) ^E				Full Year	2014 110.5 158.4 191.2 137.4 597.5	2015 122.0 144.4 183.5 138.4 588.3	2016 121.7 152.4 184.3 151.0 609.4	2017 122.0 171.1 211.7 155.2 660	2018 130 175 215 165 685																																	
	Cal-endar	EARNINGS PER SHARE ^A				Full Year	2014 d.11 .36 .70 24 1.19	2015 .03 .21 .52 18 .94	2016 d.02 .24 .48 31 1.01	2017 .02 .39 .70 29 1.40	2018 .08 .42 .72 33 1.55																																	
	Cal-endar	QUARTERLY DIVIDENDS PAID ^B				Full Year	2014 .1625 .1625 .1625 .1625 65	2015 .1675 .1675 .1675 .1675 67	2016 .1725 .1725 .1725 .1725 69	2017 .18 .18 .18 .18 72	2018																																	
	California Water Service Group stock is trading around recently established all-time highs. The regulated water utility wrapped up 2017 by surging through the \$45-per-share price threshold on more than one occasion, with shares rising 33% on the year. Since our previous review, the equity is up more than 10% in value. Indeed, the investment community has handsomely rewarded the company for delivering consistent top- and bottom-line growth, quarter to quarter. However, fourth-quarter share-net may slip by two cents. For 2018, our ranking system suggests another strong performance may be in store, as CWT shares are poised to outpace the year-ahead broader market averages (Timeliness: 2).		We think the positives will continue to outweigh the negatives here. California Water Service is enjoying the fruits of recent rate increases by the California regulatory authority. In fact, the decision has added more than \$30 million in incremental revenues so far. In addition, favorable changes to the corporate tax rate should help lift profits this year. To address the latter, the company's operating		expenses are still on the rise, despite some progress in the second quarter. Water costs (only investment upgrades can be recouped) from greater customer usage, as well as periodic increases in wholesale supplier rates, are pushing expenses higher. Overall, we are adding \$10 million and \$0.10 to our 2018 revenue and earnings estimates, to \$685 million and \$1.55 a share, respectively.		Aggressive infrastructure spending remains on tap through next decade. As previously noted, California has close to \$500 million left on its investment budget, and has earmarked the funds for upgrades to its aging infrastructure and water systems. On top of that, these improvements are likely to be accompanied by bolt-on acquisitions.		This issue is best suited for short-term accounts. On the other hand, CWT shares have been on a multiyear price ascent and, as a result, total return potential 3 to 5 years out is unappealing. Thus, we think investors with a longer-term holding period can find more-attractive options elsewhere, at this time.																																			
	Company's Financial Strength B++		Stock's Price Stability 80		Price Growth Persistence 35		Earnings Predictability 65																																					
	(A) Basic EPS. Excl. nonrecurring gain (loss): '01, 2¢; '02, 4¢; '11, 4¢. Next earnings report due late February.		May, Aug., and Nov. ■ Div'd reinvestment plan available.		(D) In millions, adjusted for splits.		(E) Excludes non-reg. rev.																																					
	(B) Dividends historically paid in late Feb.,		(C) Incl. intangible assets. In '16: \$21.9 mill., \$0.46/sh.		© 2018 Value Line, Inc. All rights reserved. Factual material is obtained from sources believed to be reliable and is provided without warranties of any kind. THE PUBLISHER IS NOT RESPONSIBLE FOR ANY ERRORS OR OMISSIONS HEREIN. This publication is strictly for subscriber's own, non-commercial, internal use. No part of it may be reproduced, resold, stored or transmitted in any printed, electronic or other form, or used for generating or marketing any printed or electronic publication, service or product.		To subscribe call 1-800-VALUeline																																					

Nicholas P. Patrikis January 12, 2018

MIDDLESEX WATER NDQ-MSEX RECENT PRICE **39.09** P/E RATIO **25.9** (Trailing: 31.3 Median: 20.0) RELATIVE P/E RATIO **1.26** DIV/D YLD **2.3%** VALUE LINE



2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	© VALUE LINE PUB. LLC	20-22
5.87	5.98	6.12	6.25	6.44	6.16	6.50	6.79	6.75	6.60	6.50	6.98	7.19	7.26	7.77	8.16	8.10	8.55	Revenues per sh	9.40
1.18	1.20	1.15	1.28	1.33	1.33	1.49	1.53	1.40	1.55	1.46	1.56	1.72	1.84	1.97	2.17	2.25	2.55	"Cash Flow" per sh	3.15
66	73	61	73	71	82	87	89	72	96	84	90	1.03	1.13	1.22	1.38	1.40	1.65	Earnings per sh ^A	2.10
62	63	65	66	67	68	69	70	71	72	73	74	75	76	78	81	86	.91	Div'd Decl'd per sh ^B	1.06
1.25	1.59	1.87	2.54	2.18	2.31	1.66	2.12	1.49	1.90	1.50	1.36	1.26	1.40	1.59	2.91	1.80	1.90	Cap'l Spending per sh	2.05
7.11	7.39	7.60	8.02	8.26	9.52	10.05	10.03	10.33	11.13	11.27	11.48	11.82	12.24	12.74	13.40	13.95	14.65	Book Value per sh	16.75
10.17	10.36	10.48	11.36	11.58	13.17	13.25	13.40	13.52	15.57	15.70	15.82	15.96	16.12	16.23	16.30	16.50	16.75	Common Shs Outst ^g C	17.00
24.6	23.5	30.0	26.4	27.4	22.7	21.6	19.8	21.0	17.8	21.7	20.8	19.7	18.5	19.1	25.6	28.0		Avg Ann'l P/E Ratio	21.0
1.26	1.28	1.71	1.39	1.46	1.23	1.15	1.19	1.40	1.13	1.36	1.32	1.11	.97	.96	1.35	1.37		Relative P/E Ratio	1.30
3.8%	3.7%	3.5%	3.4%	3.5%	3.7%	3.7%	4.0%	4.7%	4.2%	4.0%	4.0%	3.7%	3.7%	3.3%	2.3%	2.2%		Avg Ann'l Div'd Yield	2.5%

CAPITAL STRUCTURE as of 9/30/17		2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Total Debt	\$166.8 mill. Due in 5 Yrs \$32.1 mill.	86.1	91.0	91.2	102.7	102.1	110.4	114.8	117.1	126.0	132.9	134	143	143	143	143	143	143	143
LT Debt	\$135.8 mill. LT Interest \$6.0 mill.	11.8	12.2	10.0	14.3	13.4	14.4	16.6	18.4	20.0	22.7	23.0	27.5	27.5	27.5	27.5	27.5	27.5	27.5
(Total interest coverage: 10.9x) (38% of Cap'l)		32.6%	33.2%	34.1%	32.1%	32.7%	33.9%	34.1%	35.0%	34.5%	34.0%	32.0%	21.0%	21.0%	21.0%	21.0%	21.0%	21.0%	21.0%
Pension Assets-12/16 \$59.4 mill. Oblig. \$78.6 mill.		49.0%	45.6%	46.6%	43.1%	42.3%	41.5%	40.4%	40.5%	39.4%	37.9%	37.5%	37.0%	37.0%	37.0%	37.0%	37.0%	37.0%	37.0%
Pfd Stock \$2.4 mill. Pfd Div'd: \$ 1 mill.		268.8	259.4	267.9	310.5	312.5	316.5	321.4	335.8	345.4	355.4	370	390	390	390	390	390	390	390
Common Stock 16,346,036 shs. as of 10/31/17		333.9	366.3	376.5	405.9	422.2	435.2	446.5	465.4	481.9	517.8	525	535	535	535	535	535	535	535
MARKET CAP: \$650 million (Small Cap)		5.6%	5.8%	5.0%	5.7%	5.2%	5.4%	5.9%	6.3%	6.6%	7.1%	7.0%	7.5%	7.5%	7.5%	7.5%	7.5%	7.5%	7.5%
CURRENT POSITION (\$MILL.)		8.6%	8.6%	7.0%	8.1%	7.5%	7.8%	8.7%	9.2%	9.6%	10.3%	10.0%	11.5%	11.5%	11.5%	11.5%	11.5%	11.5%	11.5%
Cash Assets		18%	2.0%	1%	2.1%	1.0%	1.4%	2.4%	3.1%	3.5%	4.3%	4.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%
Other		79%	78%	98%	75%	87%	83%	73%	67%	63%	58%	61%	55%	55%	55%	55%	55%	55%	55%

BUSINESS: Middlesex Water Company engages in the ownership and operation of regulated water utility systems in New Jersey, Delaware, and Pennsylvania. It also operates water and wastewater systems under contract on behalf of municipal and private clients in NJ and DE. Its Middlesex System provides water services to 61,000 retail customers, primarily in Middlesex County, New Jersey. In 2016, the Middlesex System accounted for 60% of operating revenues. At 12/31/16, the company had 309 employees. Incorporated: NJ. President, CEO, and Chairman: Dennis W. Doll. Officers & directors own 3.5% of the common stock; BlackRock Institutional Trust Co., 7.2% (4/17 proxy). Add: 1500 Ronson Road, Iselin, NJ 08830. Tel: 732-634-1500. Internet: www.middlesexwater.com.

Middlesex Water Company's battle with mother nature has yet to subside. The story hasn't changed much over the past three months, as weather-related disruptions took a toll on its top line once again. Operating in the Northeast region of the U.S. leaves MSEX vulnerable to extremely volatile weather conditions, which can noticeably impact customer water consumption. Specifically, its Middlesex New Jersey operations saw revenues contract \$1.8 million, year over year, due to softer consumption, while its Delaware utility system was essentially flat, thanks to contributions from added residential customers during the period. Overall, Middlesex generated \$36.2 million in revenues for the September period, \$1.6 million less than last year's haul. This has spurred us to trim \$3.0 million off our 2017 top-line forecast, to \$134 million.

The outlook for profit growth in 2018 is good. Operating margins ought to remain relatively steady, with few changes to the cost structure expected. Meantime, a reduced income tax rate (new tax act and various investment spending deductions) is the main driver behind our improved perspective. All told, we look for earnings to expand 18% this year, to \$1.65 a share (+0.05), on revenues of \$143 million (-\$2.0 million).

Long-term, infrastructure upgrades ought to bear fruit. Approximately \$12 million per year (for the next three years) is earmarked for the replacement of aging water mains, valves, and other infrastructure upgrades. **The company boosted its quarterly dividend payout by about 6%, to \$0.224 per share.** Shareholders have enjoyed 45 years of consecutive dividend increases, and we don't think this streak will be broken anytime soon. At present, MSEX shares offer a yield that fractionally outpaces the average of all dividend paying stocks in *The Value Line Investment Survey*.

This issue is still a subpar selection for relative year-ahead price performance (Timeliness: 4). What's more, total return potential over the pull to 2020-2022 is nothing to write home about. Thus, we think investors can find better options elsewhere, at this juncture. *Nicholas P. Patrikis January 12, 2018*

Cal-endar	QUARTERLY REVENUES (\$ mill.)	Full Year	Cal-endar	EARNINGS PER SHARE ^A	Full Year	Cal-endar	QUARTERLY DIVIDENDS PAID ^B	Full Year
	Mar.31 Jun. 30 Sep.30 Dec. 31			Mar.31 Jun. 30 Sep. 30 Dec. 31			Mar.31 Jun.30 Sep.30 Dec.31	
2014	27.1 29.2 32.7 28.1	117.1	2014	.20 .29 .42 .22	1.13	2014	.19 .19 .19 .1925	.76
2015	28.8 31.7 34.7 30.8	126.0	2015	.22 .31 .41 .28	1.22	2015	.1925 .1925 .1925 .19875	.78
2016	30.6 32.7 37.8 31.8	132.9	2016	.29 .36 .54 .19	1.38	2016	.19875 .19875 .19875 .21125	.81
2017	30.1 33.0 36.2 34.7	134	2017	.27 .33 .46 .34	1.40	2017	.21125 .21125 .21125 .22375	.86
2018	33.0 37.0 38.0 35.0	143	2018	.33 .38 .60 .34	1.65	2018		

(A) Diluted earnings. Next earnings report due early February. (B) Dividends historically paid in mid-Feb., May, Aug., and November. Div'd reinvestment plan available. (C) In millions, adjusted for split.

YORK WATER NDQ-YORW

RECENT PRICE **33.35** P/E RATIO **30.0** (Trailing: 34.4 Median: 24.0) RELATIVE P/E RATIO **1.46** DIV'D YLD **2.0%** VALUE LINE

TIMELINESS 3 Raised 11/17/17
SAFETY 3 Lowered 7/17/15
TECHNICAL 2 Raised 1/5/18
BETA 80 (1.00 - Market)

2020-22 PROJECTIONS
 High Price 45 (+35%) Ann'l Total Return 10%
 Low Price 30 (-10%) Nil

Insider Decisions
 M A M J J A S O N
 to Buy 1 13 2 2 13 2 2 13 2
 Options 0 0 13 0 0 0 0 0 0
 to Sell 0 0 0 0 0 0 0 0 0

Institutional Decisions
 1Q2017 2Q2017 3Q2017
 to Buy 38 42 40
 to Sell 33 33 30
 Hlds(000) 5127 5206 5125

LEGENDS
 1.10 x Dividends p sh divided by Interest Rate
 Relative Price Strength
 3-for-2 split 9/06
 Options: Yes
 Shaded area indicates recession

% TOT. RETURN 12/17
 THIS STOCK VL ARITH. INDEX
 1 yr -9.6 15.8
 3 yr 55.7 30.1
 5 yr 115.9 92.5

2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	© VALUE LINE PUB. LLC 20-22		
2.05	2.05	2.17	2.18	2.58	2.56	2.79	2.89	2.95	3.07	3.18	3.21	3.27	3.58	3.68	3.70	3.75	3.95	Revenues per sh	5.40	
.59	.57	.65	.65	.79	.77	.86	.88	.95	1.07	1.09	1.12	1.19	1.36	1.45	1.42	1.65	1.75	"Cash Flow" per sh	2.25	
.43	.40	.47	.49	.56	.58	.57	.57	.64	.71	.71	.72	.75	.89	.97	.92	1.05	1.15	Earnings per sh A	1.60	
.34	.35	.37	.39	.42	.45	.48	.49	.51	.52	.53	.54	.55	.57	.60	.63	.65	.70	Div'd Decl'd per sh B	.96	
.75	.66	1.07	2.50	1.69	1.85	1.69	2.17	1.18	.83	.74	.94	.76	1.10	1.11	1.03	1.95	1.25	Cap'l Spending per sh	.95	
3.79	3.90	4.06	4.65	4.85	5.84	5.97	6.14	6.92	7.19	7.45	7.73	7.98	8.15	8.51	8.88	9.30	9.55	Book Value per sh	11.20	
9.46	9.55	9.63	10.33	10.40	11.20	11.27	11.37	12.56	12.69	12.79	12.92	12.98	12.83	12.81	12.85	12.90	12.75	Common Shs Outst'g C	12.50	
17.8	26.9	24.5	25.7	26.3	31.2	30.3	24.6	21.9	20.7	23.9	24.4	26.3	23.1	23.5	32.8	33.3		Avg Ann'l P/E Ratio	22.5	
.91	1.47	1.40	1.36	1.40	1.68	1.61	1.48	1.46	1.32	1.50	1.55	1.48	1.22	1.18	1.72	1.62		Relative P/E Ratio	1.40	
4.4%	3.3%	3.2%	3.1%	2.9%	2.5%	2.8%	3.5%	3.6%	3.5%	3.1%	3.1%	2.8%	2.8%	2.6%	2.1%	1.9%		Avg Ann'l Div'd Yield	2.6%	
CAPITAL STRUCTURE as of 9/30/17				31.4	32.8	37.0	39.0	40.6	41.4	42.4	45.9	47.1	47.6	48.5	50.5	50.5	50.5	50.5	Revenues (\$mill)	67.5
Total Debt \$88.9 mill. Due in 5 Yrs \$30.5 mill.				6.4	6.4	7.5	8.9	9.1	9.3	9.7	11.5	12.5	11.8	13.5	14.5	14.5	14.5	14.5	Net Profit (\$mill)	20.0
LT Debt \$88.9 mill. LT Interest \$5.4 mill.																			Income Tax Rate	21.0%
																			AFUDC % to Net Profit	1.5%
																			Long-Term Debt Ratio	43.5%
Pension Assets 12/16 \$35.5 mill.				46.5%	54.5%	45.7%	48.3%	47.1%	46.0%	45.1%	44.8%	44.4%	42.6%	43.0%	43.0%	43.0%	43.0%	43.0%	Common Equity Ratio	56.5%
Oblig. \$40.8 mill.				53.5%	45.5%	54.3%	51.7%	52.9%	54.0%	54.9%	55.2%	55.6%	57.4%	57.0%	57.0%	57.0%	57.0%	57.0%	Total Capital (\$mill)	250
Pfd Stock None				125.7	153.4	160.1	176.4	180.2	184.8	188.4	189.4	196.3	198.7	210	220	220	220	220	Net Plant (\$mill)	295
Common Stock 12,859,432 shs.				191.6	211.4	222.0	228.4	233.0	240.3	244.2	253.2	261.4	270.9	275	280	280	280	280	Return on Total Cap'l	9.0%
MARKET CAP: \$425 million (Small Cap)				6.7%	5.7%	6.2%	6.5%	6.4%	6.4%	6.5%	7.4%	7.6%	7.2%	7.5%	8.0%	8.0%	8.0%	8.0%	Return on Shr. Equity	14.5%
CURRENT POSITION (\$MILL.)				9.5%	9.2%	8.6%	9.8%	9.5%	9.3%	9.3%	11.0%	11.5%	10.4%	11.5%	12.0%	12.0%	12.0%	12.0%	Return on Com Equity	14.3%
Cash Assets				2.9	4.2	--	--	--	1.7%	1.4%	1.9%	2.7%	2.5%	2.4%	3.9%	4.4%	3.4%	4.0%	Retained to Com Eq	5.5%
Accounts Receivable				3.5	4.3	4.4	4.4	4.4	82%	85%	78%	72%	73%	74%	74%	64%	62%	67%	All Div'ds to Net Prof	60%
Inventory (Avg. Cost)				.8	.7	.9	.9	.9												
Other				4.6	3.4	3.3	3.3	3.3												
Current Assets				11.8	12.6	8.6	8.6	8.6												
Accts Payable				1.8	3.7	4.0	4.0	4.0												
Debt Due				--	--	--	--	--												
Other				4.4	4.5	6.1	6.1	6.1												
Current Liab.				6.2	8.2	10.1	10.1	10.1												

ANNUAL RATES of change (per sh)

	Past 10 Yrs.	Past 5 Yrs.	Est'd '14-'16 to '20-'22
Revenues	4.0%	3.5%	6.5%
"Cash Flow"	6.5%	6.5%	8.0%
Earnings	5.5%	6.0%	9.5%
Dividends	3.5%	3.0%	8.0%
Book Value	5.0%	3.5%	4.5%

QUARTERLY REVENUES (\$ mill.)

Cal-endar	Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2014	10.6	11.8	12.0	11.5	45.9
2015	11.2	11.9	12.4	11.6	47.1
2016	11.3	11.8	12.6	11.9	47.6
2017	11.3	12.3	12.7	12.2	48.5
2018	12.0	12.5	13.3	12.7	50.5

EARNINGS PER SHARE A

Cal-endar	Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2014	.16	.22	.23	.28	.89
2015	.20	.22	.28	.27	.97
2016	.19	.23	.27	.23	.92
2017	.20	.23	.31	.31	1.05
2018	.24	.25	.34	.32	1.15

QUARTERLY DIVIDENDS PAID B

Cal-endar	Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2014	.1431	.1431	.1431	.1431	.572
2015	.1495	.1495	.1495	.1555	.604
2016	.1555	.1555	.1555	.1602	.627
2017	.1602	.1602	.1602	.1666	.647
2018					

BUSINESS: The York Water Company is the oldest investor-owned regulated water utility in the United States. It has operated continuously since 1816. As of December 31, 2016, the company's average daily availability was 35.4 million gallons and its service territory had an estimated population of 196,000. Has more than 67,000 customers. Residential customers accounted for 63% of 2016 revenues;

York Water delivered a better-than-expected bottom-line performance in the third quarter. The regulated water utility earned \$0.31 a share for the September period (+15% year over year), besting our \$0.29 call by two cents. The advance can be largely attributed to a lower effective tax rate (asset improvements qualify for deductions), higher surcharges to customers, and an increased allowance for funds used during construction (interest deduction). Meanwhile, operation and maintenance expenses as a percentage of revenues rose 200 basis points, on an annual basis, which makes the share-net showing even more encouraging. On the other hand, revenue growth was essentially nonexistent, dragged down by generally lower consumption.

We are adjusting our 2018 top- and bottom-line estimates. Despite an expanding customer base (acquisition-driven), York's top line is under some pressure. We now look for revenues of \$50.5 million in 2018, down from our prior forecast of \$52.0 million. Conversely, we are adding a dime to our earnings-per-share estimate, to \$1.15.

commercial and industrial (29%); other (8%). It also provides sewer billing services. Incorporated: PA. York had 105 full-time employees at 12/31/16. President/CEO: Jeffrey R. Hines. Officers/directors own 1.1% of the common stock (3/17 proxy). Address: 130 East Market Street, York, Pennsylvania 17401. Telephone: (717) 845-3601. Internet: www.yorkwater.com.

Capital expenditures ought to remain par for the course going forward. Management estimates it spent approximately \$25 million in 2017 on aging infrastructure, raw water pumping stations, and pipe replacements, more than double the year-earlier total. With plenty of its footprint still needing to be brought up to speed, we anticipate at least several years of aggressive investment spending.

York Water raised its quarterly dividend by 4%, to \$0.17 a share. This marks 21 consecutive years that the company has increased its annual dividend payout. The current yield is fractionally above that of the Value Line median, but should trend higher into next decade thanks to additional dividend hikes.

York Water shares have moved up one notch for Timeliness, to 3, and are now pegged to track the year-ahead broader market averages. Prospects out to the 2020-2022 time frame are bright, though most of the benefits we envision appear to already be baked into the stock price. Capital appreciation potential does not stand out at the recent quotation.

Nicholas P. Patrikis January 12, 2018

SUEZ Water Pennsylvania Inc.
Summary of Risk Premium Models for the
Proxy Group of Six Water Companies

	<u>Proxy Group of Six Water Companies</u>
Predictive Risk Premium Model (PRPM) (1)	13.43 %
Risk Premium Using an Adjusted Total Market Approach (2)	<u>10.80 %</u>
Average	<u><u>12.12 %</u></u>

Notes:

(1) From page 2 of this Schedule.

(2) From page 3 of this Schedule.

SUEZ Water Pennsylvania Inc.
Indicated ROE
Derived by the Predictive Risk Premium Model (1)

	[1]	[2]	[3]	[4]	[5]	[6]	[7]
<u>Proxy Group of Six Water Companies</u>	<u>LT Average Predicted Variance</u>	<u>Spot Predicted Variance</u>	<u>Average Predicted Variance</u>	<u>GARCH Coefficient</u>	<u>Predicted Risk Premium (2)</u>	<u>Risk-Free Rate (3)</u>	<u>Indicated ROE (4)</u>
American States Water Co.	0.38%	0.33%	0.36%	1.77802	7.96%	3.69%	11.65%
American Water Works Company Inc	NMF	NMF	NMF	4.90988	NMF	3.69%	NMF
Aqua America Inc	0.45%	0.32%	0.39%	2.26697	11.14%	3.69%	14.83%
California Water Service Group	0.32%	0.42%	0.37%	1.86909	8.62%	3.69%	12.31%
Middlesex Water Co.	0.30%	0.52%	0.41%	1.87709	9.64%	3.69%	13.33%
York Water Co.	0.47%	0.47%	0.47%	1.98492	11.79%	3.69%	<u>15.48%</u>
						Average	<u>13.52%</u>
						Median	<u>13.33%</u>
					Average of Mean and Median		<u>13.43%</u>

NMF = Not Meaningful Figure

Notes:

- (1) The Predictive Risk Premium Model uses historical data to generate a predicted variance and a GARCH coefficient. The historical data used are the equity risk premiums for the first available trading month as reported by Bloomberg Professional Service.
- (2) $(1 + (\text{Column [3]} * \text{Column [4]})^{12}) - 1$.
- (3) From note 2 on page 2 of Schedule DWD-5.
- (4) Column [5] + Column [6].

SUEZ Water Pennsylvania Inc.
Indicated Common Equity Cost Rate
Through Use of a Risk Premium Model
Using an Adjusted Total Market Approach

<u>Line No.</u>		<u>Proxy Group of Six Water Companies</u>
1.	Prospective Yield on Aaa Rated Corporate Bonds (1)	4.66 %
2.	Adjustment to Reflect Yield Spread Between Aaa Rated Corporate Bonds and A Rated Public Utility Bonds	<u>0.28</u> (2)
3.	Adjusted Prospective Yield on A Rated Public Utility Bonds	4.94 %
4.	Adjustment to Reflect Bond Rating Difference of Proxy Group	<u>0.06</u> (3)
5.	Adjusted Prospective Bond Yield	5.00 %
6.	Equity Risk Premium (4)	<u>5.80</u>
7.	Risk Premium Derived Common Equity Cost Rate	<u><u>10.80</u></u> %

- Notes:
- (1) Consensus forecast of Moody's Aaa Rated Corporate bonds from Blue Chip Financial Forecasts (see pages 10-11 of this Schedule).
 - (2) The average yield spread of A rated public utility bonds over Aaa rated corporate bonds of 0.28% from page 4 of this Schedule.
 - (3) Adjustment to reflect the A2 / A3 Moody's LT issuer rating of the proxy group of eight water companies as shown on page 5 of this Schedule. The 0.06% upward adjustment is derived by taking 1/6 of the spread between A2 and A3 Public Utility Bonds ($1/6 * 0.34\% = 0.06\%$) as derived from page 4 of this Schedule.
 - (4) From page 7 of this Schedule.

SUEZ Water Pennsylvania Inc.
Interest Rates and Bond Spreads for
Moody's Corporate and Public Utility Bonds

Selected Bond Yields

	[1]	[2]	[3]
	<u>Aaa Rated Corporate Bond</u>	<u>A Rated Public Utility Bond</u>	<u>Baa Rated Public Utility Bond</u>
Feb-2018	3.87 %	4.13 %	4.52 %
Jan-2018	3.82	4.09	4.42
Dec-2017	<u>3.55</u>	<u>3.86</u>	<u>4.18</u>
Average	<u>3.75 %</u>	<u>4.03 %</u>	<u>4.37 %</u>

Selected Bond Spreads

A Rated Public Utility Bonds Over Aaa Rated Corporate Bonds:

0.28 % (1)

Baa Rated Public Utility Bonds Over A Rated Public Utility Bonds:

0.34 % (2)

Notes:

(1) Column [2] - Column [1].

(2) Column [3] - Column [2].

Source of Information:

Bloomberg Professional Service

SUEZ Water Pennsylvania Inc.
Comparison of Long-Term Issuer Ratings for
Proxy Group of Six Water Companies

	<u>Moody's</u>		<u>Standard & Poor's</u>	
	<u>Long-Term Issuer Rating</u>		<u>Long-Term Issuer Rating</u>	
<u>Proxy Group of Six Water Companies</u>	<u>Long-Term Issuer Rating</u>	<u>Numerical Weighting(1)</u>	<u>Long-Term Issuer Rating</u>	<u>Numerical Weighting(1)</u>
American States Water Co. (2)	A2	6.0	A+	5.0
American Water Works Company Inc (3)	A3	7.0	A	6.0
Aqua America Inc (4)	NR	--	A+	5.0
California Water Service Group (5)	NR	--	A+	5.0
Middlesex Water Co.	NR	--	A	6.0
York Water Co.	NR	--	A-	7.0
Average	<u>A2/A3</u>	<u>6.5</u>	<u>A</u>	<u>5.7</u>

Notes:

- (1) From page 6 of this Schedule.
- (2) Ratings that of Golden State Water Company.
- (3) Ratings that of New Jersey and Pennsylvania American Water Companies.
- (4) Ratings that of Aqua Pennsylvania, Inc.
- (5) Ratings that of California Water Service Company.

Source Information: Moody's Investors Service
Standard & Poor's Global Utilities Rating Service

Numerical Assignment for
Moody's and Standard & Poor's Bond Ratings

<u>Moody's Bond Rating</u>	<u>Numerical Bond Weighting</u>	<u>Standard & Poor's Bond Rating</u>
Aaa	1	AAA
Aa1	2	AA+
Aa2	3	AA
Aa3	4	AA-
A1	5	A+
A2	6	A
A3	7	A-
Baa1	8	BBB+
Baa2	9	BBB
Baa3	10	BBB-
Ba1	11	BB+
Ba2	12	BB
Ba3	13	BB-
B1	14	B+
B2	15	B
B3	16	B-

SUEZ Water Pennsylvania Inc.
Judgment of Equity Risk Premium for
Proxy Group of Six Water Companies

<u>Line No.</u>		<u>Proxy Group of Six Water Companies</u>
1.	Calculated equity risk premium based on the total market using the beta approach (1)	6.64 %
2.	Mean equity risk premium based on a study using the holding period returns of public utilities with A rated bonds (2)	<u>4.95</u>
3.	Average equity risk premium	<u><u>5.80 %</u></u>

Notes: (1) From page 8 of this Schedule.
(2) From page 12 of this Schedule.

SUEZ Water Pennsylvania Inc.
Derivation of Equity Risk Premium Based on the Total Market Approach
Using the Beta for the
Proxy Group of Six Water Companies

<u>Line No.</u>	<u>Equity Risk Premium Measure</u>	<u>Proxy Group of Six Water Companies</u>
<u>Ibbotson-Based Equity Risk Premiums:</u>		
1.	Ibbotson Equity Risk Premium (1)	5.56 %
2.	Regression on Ibbotson Risk Premium Data (2)	7.31
3.	Ibbotson Equity Risk Premium based on PRPM (3)	<u>6.66</u>
4.	Average Ibbotson Equity Risk Premium	<u><u>6.51</u></u>
<u>Value Line-Based Equity Risk Premiums:</u>		
5.	Equity Risk Premium Based on Value Line Summary and Index (4)	4.68
6.	Equity Risk Premium Based on Value Line S&P 500 Companies (5)	<u>11.07</u>
7.	Average Value Line Equity Risk Premium	<u><u>7.87</u></u>
<u>Bloomberg-Based Equity Risk Premium:</u>		
8.	Equity Risk Premium Based on Bloomberg S&P 500 Companies (6)	<u><u>9.93</u></u>
9.	Conclusion of Equity Risk Premium (7)	8.10 %
10.	Adjusted Beta (8)	<u>0.82</u>
11.	Forecasted Equity Risk Premium	<u><u>6.64 %</u></u>

Notes provided on page 9 of this Schedule.

SUEZ Water Pennsylvania Inc.
Derivation of Equity Risk Premium Based on the Total Market Approach
Using the Beta for the
Proxy Group of Six Water Companies

Notes:

- (1) Based on the arithmetic mean historical monthly returns on large company common stocks from Ibbotson® SBBI® 2017 Market Report minus the arithmetic mean monthly yield of Moody's average Aaa and Aa corporate bonds from 1926-2016.
- (2) This equity risk premium is based on a regression of the monthly equity risk premiums of large company common stocks relative to Moody's average Aaa and Aa rated corporate bond yields from 1928-2017 referenced in Note 1 above.
- (3) The Predictive Risk Premium Model (PRPM) is discussed in the accompanying direct testimony. The Ibbotson equity risk premium based on the PRPM is derived by applying the PRPM to the monthly risk premiums between Ibbotson large company common stock monthly returns and average Aaa and Aa corporate monthly bond yields, from January 1928 through March 2018.
- (4) The equity risk premium based on the Value Line Summary and Index is derived by subtracting the average consensus forecast of Aaa corporate bonds of 4.66% (from page 3 of this Schedule) from the projected 3-5 year total annual market return of 9.34% (described fully in note 1 on page 2 of Schedule DWD-5).
- (5) Using data from Value Line for the S&P 500, an expected total return of 15.73% was derived based upon expected dividend yields and long-term earnings growth estimates as a proxy for capital appreciation. Subtracting the average consensus forecast of Aaa corporate bonds of 4.66% results in an expected equity risk premium of 11.07%.
- (6) Using data from the Bloomberg Professional Service for the S&P 500, an expected total return of 14.59% was derived based upon expected dividend yields and long-term earnings growth estimates as a proxy for capital appreciation. Subtracting the average consensus forecast of Aaa corporate bonds of 4.66% results in an expected equity risk premium of 9.93%.
- (7) Average of lines 4, 7, and 8.
- (8) Average of mean and median beta from Schedule DWD-5.

Sources of Information:

Stocks, Bonds, Bills, and Inflation - 2017 SBBI Yearbook, John Wiley & Sons, Inc.
Industrial Manual and Mergent Bond Record Monthly Update.
Value Line Summary and Index
Blue Chip Financial Forecasts, December 1, 2017 and April 1, 2018
Bloomberg Professional Service

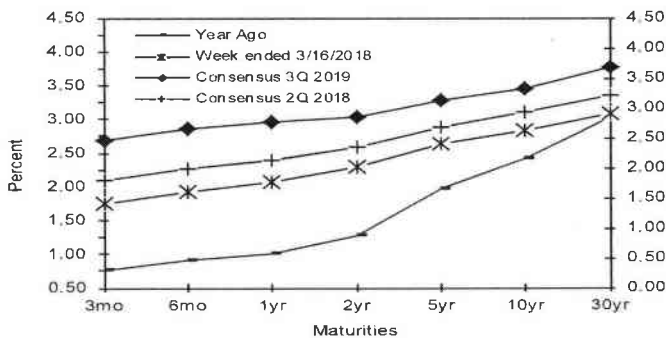
Consensus Forecasts Of U.S. Interest Rates And Key Assumptions¹

Interest Rates	History								Consensus Forecasts-Quarterly Avg.						
	Average For Week Ending				Average For Month				Latest Qtr 1Q 2018*	2Q 2018	3Q 2018	4Q 2018	1Q 2019	2Q 2019	3Q 2019
	Mar. 16	Mar. 9	Mar. 2	Feb. 23	Feb	Jan	Dec								
Federal Funds Rate	1.42	1.42	1.41	1.42	1.42	1.41	1.29	1.42	1.7	2.0	2.2	2.4	2.6	2.7	
Prime Rate	4.50	4.50	4.50	4.50	4.50	4.50	4.38	4.50	4.8	5.0	5.2	5.4	5.6	5.8	
LIBOR, 3-mo.	2.15	2.06	2.01	1.92	1.84	1.73	1.59	1.88	2.1	2.3	2.5	2.7	2.9	3.1	
Commercial Paper, 1-mo.	1.79	1.68	1.64	1.56	1.52	1.50	1.38	1.57	1.8	2.0	2.3	2.5	2.7	2.9	
Treasury bill, 3-mo.	1.75	1.68	1.65	1.64	1.56	1.43	1.33	1.56	1.8	2.0	2.2	2.3	2.5	2.7	
Treasury bill, 6-mo.	1.93	1.88	1.86	1.85	1.76	1.62	1.49	1.76	2.0	2.2	2.3	2.5	2.7	2.9	
Treasury bill, 1 yr.	2.06	2.05	2.06	2.02	1.94	1.80	1.69	1.93	2.1	2.3	2.5	2.7	2.8	3.0	
Treasury note, 2 yr.	2.28	2.25	2.24	2.25	2.16	2.02	1.83	2.15	2.4	2.5	2.7	2.8	2.9	3.0	
Treasury note, 5 yr.	2.63	2.65	2.63	2.66	2.59	2.36	2.17	2.53	2.7	2.8	2.9	3.1	3.2	3.3	
Treasury note, 10 yr.	2.84	2.88	2.86	2.91	2.84	2.56	2.40	2.75	2.9	3.1	3.2	3.3	3.4	3.4	
Treasury note, 30 yr.	3.08	3.15	3.14	3.19	3.11	2.86	2.77	3.03	3.2	3.3	3.5	3.6	3.7	3.8	
Corporate Aaa bond	3.97	4.00	3.97	3.99	3.91	3.68	3.63	3.86	4.1	4.2	4.4	4.6	4.7	4.8	
Corporate Baa bond	4.58	4.61	4.56	4.56	4.47	4.24	4.21	4.43	4.8	5.0	5.1	5.3	5.4	5.5	
State & Local bonds	3.61	3.60	3.60	3.59	3.57	3.42	3.46	3.53	3.8	3.9	4.1	4.2	4.3	4.4	
Home mortgage rate	4.44	4.46	4.43	4.40	4.33	4.03	3.95	4.27	4.5	4.6	4.8	4.9	5.0	5.2	

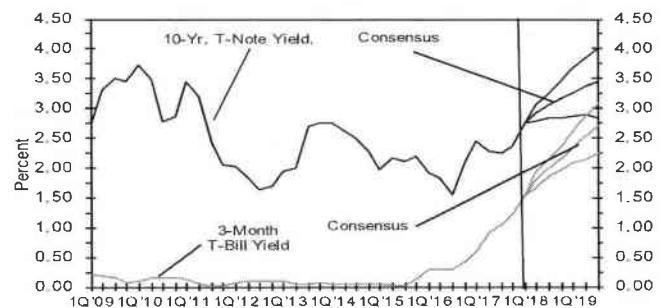
Key Assumptions	History								Consensus Forecasts-Quarterly						
	2Q				3Q				1Q*	2Q	3Q	4Q	1Q	2Q	3Q
	2016	2016	2016	2017	2017	2017	2017	2017							
Major Currency Index	89.6	90.3	93.7	94.4	93.0	88.3	88.9	86.3	86.4	86.4	86.5	86.5	86.6	86.7	
Real GDP	2.2	2.8	1.8	1.2	3.1	3.2	2.6	2.2	3.1	3.0	2.8	2.5	2.4	2.1	
GDP Price Index	2.4	1.4	2.0	2.0	1.0	2.1	2.4	2.3	2.0	2.2	2.1	2.2	2.1	2.2	
Consumer Price Index	2.3	1.8	3.0	3.1	-0.3	2.0	3.7	3.3	1.9	2.2	2.1	2.2	2.2	2.3	

Forecasts for interest rates and the Federal Reserve's Major Currency Index represent averages for the quarter. Forecasts for Real GDP, GDP Price Index and Consumer Price Index are seasonally-adjusted annual rates of change (saar). Individual panel members' forecasts are on pages 4 through 9. Historical data: Treasury rates from the Federal Reserve Board's H.15; AAA-AA and A-BBB corporate bond yields from Bank of America-Merrill Lynch and are 15+ years, yield to maturity; State and local bond yields from Bank of America-Merrill Lynch, A-rated, yield to maturity; Mortgage rates from Freddie Mac, 30-year, fixed, LIBOR quotes from Intercontinental Exchange. All interest rate data is sourced from Haver Analytics. Historical data for Fed's Major Currency Index is from FRSR H.10. Historical data for Real GDP and GDP Chained Price Index are from the Bureau of Economic Analysis (BEA). Consumer Price Index (CPI) history is from the Department of Labor's Bureau of Labor Statistics (BLS). ¹Interest rate data for 1Q 2018 based on historical data through the week ended March 16th. *Data for 1Q 2018 Major Currency Index is based on data through week ended March 16th. Figures for 1Q 2018 Real GDP, GDP Chained Price Index and Consumer Price Index are consensus forecasts based on a special question asked of the panelists' this month.

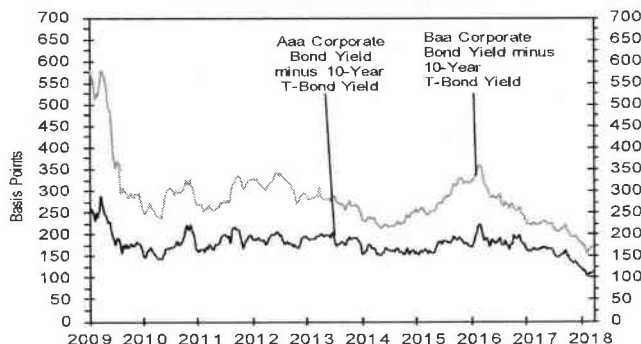
U.S. Treasury Yield Curve
 Week ended March 16, 2018 and Year Ago vs.
 2Q 2018 and 3Q 2019 Consensus Forecasts



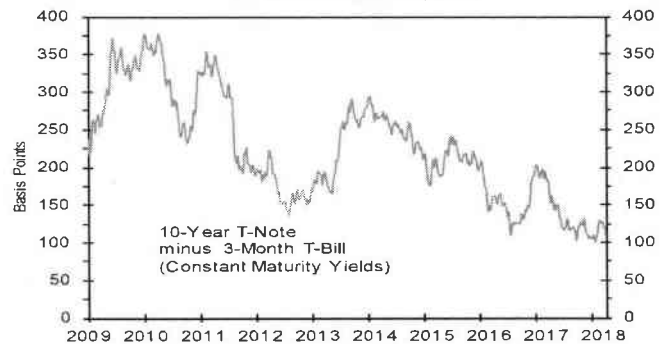
U.S. 3-Mo. T-Bills & 10-Yr. T-Note Yield
 (Quarterly Average) Forecast



Corporate Bond Spreads
 As of week ended March 16, 2018



U.S. Treasury Yield Curve
 As of week March 16, 2018



Long-Range Survey:

The table below contains the results of our twice-annual long-range CONSENSUS survey. There are also Top 10 and Bottom 10 averages for each variable. Shown are consensus estimates for the years 2019 through 2023 and averages for the five-year periods 2019-2023 and 2024-2028. Apply these projections cautiously. Few if any economic, demographic and political forces can be evaluated accurately over such long time spans.

Interest Rates		Average For The Year					Five-Year Averages	
		2019	2020	2021	2022	2023	2019-2023	2024-2028
1. Federal Funds Rate	CONSENSUS	2.5	2.7	2.9	2.9	2.9	2.8	3.0
	Top 10 Average	2.9	3.2	3.4	3.4	3.5	3.3	3.5
	Bottom 10 Average	2.1	2.0	2.3	2.3	2.4	2.2	2.4
2. Prime Rate	CONSENSUS	5.5	5.8	5.9	5.9	5.9	5.8	5.9
	Top 10 Average	5.9	6.3	6.4	6.5	6.6	6.3	6.5
	Bottom 10 Average	5.0	5.1	5.2	5.2	5.2	5.1	5.3
3. LIBOR, 3-Mo.	CONSENSUS	2.8	3.1	3.2	3.1	3.2	3.1	3.2
	Top 10 Average	3.2	3.6	3.8	3.8	3.9	3.7	3.8
	Bottom 10 Average	2.4	2.6	2.6	2.5	2.6	2.5	2.6
4. Commercial Paper, 1-Mo.	CONSENSUS	2.6	2.9	3.0	3.0	3.1	2.9	3.1
	Top 10 Average	3.1	3.5	3.6	3.7	3.8	3.5	3.8
	Bottom 10 Average	2.2	2.5	2.6	2.5	2.5	2.5	2.6
5. Treasury Bill Yield, 3-Mo.	CONSENSUS	2.5	2.8	2.9	2.9	2.9	2.8	2.9
	Top 10 Average	2.9	3.3	3.4	3.4	3.5	3.3	3.5
	Bottom 10 Average	2.1	2.3	2.4	2.3	2.3	2.3	2.4
6. Treasury Bill Yield, 6-Mo.	CONSENSUS	2.6	2.9	3.0	3.0	3.0	2.9	3.1
	Top 10 Average	3.0	3.4	3.5	3.6	3.7	3.5	3.7
	Bottom 10 Average	2.2	2.4	2.5	2.4	2.4	2.4	2.5
7. Treasury Bill Yield, 1-Yr.	CONSENSUS	2.7	3.0	3.1	3.1	3.2	3.0	3.2
	Top 10 Average	3.2	3.6	3.7	3.7	3.8	3.6	3.9
	Bottom 10 Average	2.3	2.5	2.6	2.5	2.5	2.5	2.6
8. Treasury Note Yield, 2-Yr.	CONSENSUS	2.8	3.1	3.3	3.2	3.3	3.1	3.3
	Top 10 Average	3.3	3.8	3.8	3.8	3.9	3.7	4.0
	Bottom 10 Average	2.4	2.6	2.7	2.6	2.6	2.6	2.7
10. Treasury Note Yield, 5-Yr.	CONSENSUS	3.1	3.4	3.5	3.5	3.5	3.4	3.6
	Top 10 Average	3.6	3.9	4.1	4.1	4.1	3.9	4.3
	Bottom 10 Average	2.6	2.8	2.9	2.9	2.9	2.8	3.0
11. Treasury Note Yield, 10-Yr.	CONSENSUS	3.3	3.6	3.7	3.7	3.8	3.6	3.8
	Top 10 Average	3.9	4.2	4.3	4.3	4.3	4.2	4.5
	Bottom 10 Average	2.8	2.9	3.1	3.1	3.1	3.0	3.2
12. Treasury Bond Yield, 30-Yr.	CONSENSUS	3.8	4.1	4.2	4.2	4.2	4.1	4.3
	Top 10 Average	4.4	4.7	4.7	4.7	4.8	4.7	5.0
	Bottom 10 Average	3.3	3.5	3.6	3.5	3.6	3.5	3.7
13. Corporate Aaa Bond Yield	CONSENSUS	4.9	5.1	5.2	5.2	5.3	5.1	5.4
	Top 10 Average	5.5	5.9	5.9	6.0	6.0	5.9	6.2
	Bottom 10 Average	4.3	4.5	4.5	4.5	4.6	4.5	4.7
13. Corporate Baa Bond Yield	CONSENSUS	5.7	6.0	6.0	6.0	6.1	6.0	6.2
	Top 10 Average	6.4	6.8	6.8	6.9	6.9	6.8	7.0
	Bottom 10 Average	5.0	5.2	5.3	5.2	5.3	5.2	5.4
14. State & Local Bonds Yield	CONSENSUS	4.4	4.5	4.6	4.5	4.6	4.5	4.8
	Top 10 Average	5.0	5.2	5.2	5.3	5.3	5.2	5.5
	Bottom 10 Average	3.9	4.0	4.0	3.9	4.1	4.0	4.1
15. Home Mortgage Rate	CONSENSUS	5.0	5.2	5.3	5.3	5.4	5.2	5.5
	Top 10 Average	5.5	5.8	5.9	6.0	6.0	5.8	6.1
	Bottom 10 Average	4.5	4.7	4.7	4.6	4.7	4.6	4.9
A. FRB - Major Currency Index	CONSENSUS	90.4	90.0	89.9	89.9	90.0	90.0	90.4
	Top 10 Average	94.7	94.8	95.0	95.1	95.3	95.0	95.4
	Bottom 10 Average	86.9	85.8	85.4	85.5	85.6	85.8	86.1
B. Real GDP		Year-Over-Year, % Change					Five-Year Averages	
	CONSENSUS	2.2	1.9	2.0	2.0	2.0	2.0	2.0
C. GDP Chained Price Index	Top 10 Average	2.5	2.4	2.5	2.4	2.3	2.4	2.4
	Bottom 10 Average	1.8	1.4	1.7	1.6	1.7	1.6	1.7
D. Consumer Price Index	CONSENSUS	2.2	2.1	2.1	2.1	2.1	2.1	2.1
	Top 10 Average	2.5	2.3	2.3	2.3	2.3	2.3	2.3
	Bottom 10 Average	1.8	1.9	1.9	2.0	1.9	1.9	1.9
	CONSENSUS	2.3	2.3	2.3	2.2	2.2	2.3	2.2
	Top 10 Average	2.7	2.6	2.6	2.4	2.4	2.5	2.4
	Bottom 10 Average	1.9	1.9	2.0	2.0	2.0	2.0	2.0

SUEZ Water Pennsylvania Inc.
Derivation of Mean Equity Risk Premium Based Studies
Using Holding Period Returns and
Projected Market Appreciation of the S&P Utility Index

<u>Line No.</u>		<u>Implied Equity Risk Premium</u>
	<u>Equity Risk Premium based on S&P Utility Index Holding Period Returns (1):</u>	
1.	Historical Equity Risk Premium	4.04 %
2.	Regression of Historical Equity Risk Premium (2)	5.61
3.	Forecasted Equity Risk Premium Based on PRPM (3)	<u>4.18</u>
4.	Average Equity Risk Premium Using S&P Holding Period Returns	<u>4.61 %</u>
	<u>Equity Risk Premium based on Projected Market Appreciation of the S&P Utility Index</u>	
5.	Forecasted Equity Risk Premium based on Projected Total Return on the S&P Utilities Index (Value Line Data) (4)	<u>4.86</u>
6.	Forecasted Equity Risk Premium based on Projected Total Return on the S&P Utilities Index (Bloomberg Data) (5)	<u>5.37</u>
7.	Average Equity Risk Premium (6)	<u>4.95 %</u>

- Notes: (1) Based on S&P Public Utility Index monthly total returns and Moody's Public Utility Bond average monthly yields from 1928-2017. Holding period returns are calculated based upon income received (dividends and interest) plus the relative change in the market value of a security over a one-year holding period.
- (2) This equity risk premium is based on a regression of the monthly equity risk premiums of the S&P Utility Index relative to Moody's A rated public utility bond yields from 1928 - 2017 referenced in note 1 above.
- (3) The Predictive Risk Premium Model (PRPM) is applied to the risk premium of the monthly total returns of the S&P Utility Index and the monthly yields on Moody's A rated public utility bonds from January 1928 - March 2018.
- (4) Using data from Value Line for the S&P Utilities Index, an expected return of 9.80% was derived based on expected dividend yields and long-term growth estimates as a proxy for market appreciation. Subtracting the expected A rated public utility bond yield of 4.94%, calculated on line 3 of page 3 of this Schedule results in an equity risk premium of 4.86%. (9.80% - 4.94% = 4.86%)
- (5) Using data from Bloomberg Professional Service for the S&P Utilities Index, an expected return of 10.31% was derived based on expected dividend yields and long-term growth estimates as a proxy for market appreciation. Subtracting the expected A rated public utility bond yield of 4.94%, calculated on line 3 of page 3 of this Schedule results in an equity risk premium of 5.37%. (10.31% - 4.94% = 5.37%)
- (6) Average of lines 4 through 6.

SUEZ Water Pennsylvania Inc.
 Indicated Common Equity Cost Rate Through Use
 of the Traditional Capital Asset Pricing Model (CAPM) and Empirical Capital Asset Pricing Model (ECAPM)

	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]
<u>Proxy Group of Six Water Companies</u>	<u>Value Line Adjusted Beta</u>	<u>Bloomberg Adjusted Beta</u>	<u>Average Beta</u>	<u>Market Risk Premium (1)</u>	<u>Risk-Free Rate (2)</u>	<u>Traditional CAPM Cost Rate</u>	<u>ECAPM Cost Rate</u>	<u>Indicated Common Equity Cost Rate (3)</u>
American States Water Co.	0.80	0.79	0.80	9.12 %	3.69 %	10.99 %	11.44 %	11.21 %
American Water Works Company Inc	0.65	0.71	0.68	9.12	3.69	9.89	10.62	10.26
Aqua America Inc	0.75	0.79	0.77	9.12	3.69	10.71	11.24	10.97
California Water Service Group	0.80	0.88	0.84	9.12	3.69	11.35	11.72	11.53
Middlesex Water Co.	0.80	0.93	0.87	9.12	3.69	11.62	11.92	11.77
York Water Co.	0.80	0.93	0.87	9.12	3.69	11.62	11.92	11.77
Mean			<u>0.81</u>			<u>11.03 %</u>	<u>11.48 %</u>	<u>11.25 %</u>
Median			<u>0.82</u>			<u>11.17 %</u>	<u>11.58 %</u>	<u>11.37 %</u>
Average of Mean and Median			<u>0.82</u>			<u>11.10</u>	<u>11.53</u>	<u>11.31 %</u>

Notes on page 2 of this Schedule.

SUEZ Water Pennsylvania Inc.
Notes to Accompany the Application of the CAPM and ECAPM

Notes:

- (1) The market risk premium (MRP) is derived by using six different measures from three sources: Ibbotson, Value Line, and Bloomberg as illustrated below:

Historical Data MRP Estimates:

Measure 1: Ibbotson Arithmetic Mean MRP (1926-2016)

Arithmetic Mean Monthly Returns for Large Stocks 1926-2016:	11.97 %
Arithmetic Mean Income Returns on Long-Term Government Bonds:	5.17
MRP based on Ibbotson Historical Data:	6.80 %

Measure 2: Application of a Regression Analysis to Ibbotson Historical Data (1926-2016)

8.49 %

Measure 3: Application of the PRPM to Ibbotson Historical Data: (January 1926 - March 2018)

7.55 %

Average Historical Data MRP 7.61 %

Value Line MRP Estimates:

Measure 4: Value Line Projected MRP (Thirteen weeks ending March 30, 2018)

Total projected return on the market 3-5 years hence*:	9.34 %
Projected Risk-Free Rate (see note 2):	3.69
MRP based on Value Line Summary & Index:	5.65 %

*Forecasted 3-5 year capital appreciation plus expected dividend yield

Measure 5: Value Line Projected Return on the Market based on the S&P 500

Total return on the Market based on the S&P 500:	15.73 %
Projected Risk-Free Rate (see note 2):	3.69
MRP based on Value Line data	12.04 %

Average Value Line MRP: 8.84 %

Measure 6: Bloomberg Projected MRP

Total return on the Market based on the S&P 500:	14.59 %
Projected Risk-Free Rate (see note 2):	3.69
MRP based on Bloomberg data	10.90 %

Average of Value Line, Ibbotson, and Bloomberg MRP: 9.12 %

- (2) For reasons explained in the direct testimony, the appropriate risk-free rate for cost of capital purposes is the average forecast of 30 year Treasury Bonds per the consensus of nearly 50 economists reported in Blue Chip Financial Forecasts. (See pages 10-11 of Schedule DWD-4.) The projection of the risk-free rate is illustrated below:

Second Quarter 2018	3.20 %
Third Quarter 2018	3.30
Fourth Quarter 2018	3.50
First Quarter 2019	3.60
Second Quarter 2019	3.70
Third Quarter 2019	3.80
2019-2023	4.10
2024-2028	4.30
	3.69 %

- (3) Average of Column 6 and Column 7.

Sources of Information:

Value Line Summary and Index
Blue Chip Financial Forecasts, December 1, 2017 and April 1, 2018
Stocks, Bonds, Bills, and Inflation - 2017 SBBi Yearbook, John Wiley & Sons, Inc.
Bloomberg Professional Services

SUEZ Water Pennsylvania Inc.
Basis of Selection of the Group of Non-Price Regulated Companies
Comparable in Total Risk to the Utility Proxy Group

The criteria for selection of the Non-Price Regulated Proxy Group was that the non-price regulated companies be domestic and reported in Value Line Investment Survey (Standard Edition).

The Non-Price Regulated Proxy Group was then selected based on the unadjusted beta range of 0.38 – 0.78 and residual standard error of the regression range of 2.4465 – 2.9177 of the Utility Proxy Group.

These ranges are based upon plus or minus two standard deviations of the unadjusted beta and standard error of the regression. Plus or minus two standard deviations captures 95.50% of the distribution of unadjusted betas and residual standard errors of the regression.

The standard deviation of the Utility Proxy Group's residual standard error of the regression is 0.1178. The standard deviation of the standard error of the regression is calculated as follows:

$$\text{Standard Deviation of the Std. Err. of the Regr.} = \frac{\text{Standard Error of the Regression}}{\sqrt{2N}}$$

where: N = number of observations. Since Value Line betas are derived from weekly price change observations over a period of five years, N = 259

$$\text{Thus, } 0.1178 = \frac{2.6821}{\sqrt{518}} = \frac{2.6821}{22.7596}$$

Source of Information: Value Line, Inc., March 2018
Value Line Investment Survey (Standard Edition)

SUEZ Water Pennsylvania Inc.
Basis of Selection of Comparable Risk
Domestic Non-Price Regulated Companies

	[1]	[2]	[3]	[4]
<u>Proxy Group of Six Water Companies</u>	<u>Value Line Adjusted Beta</u>	<u>Unadjusted Beta</u>	<u>Residual Standard Error of the Regression</u>	<u>Standard Deviation of Beta</u>
American States Water Co.	0.75	0.62	2.7925	0.1058
American Water Works Company Inc	0.65	0.42	2.0354	0.0771
Aqua America Inc	0.70	0.54	2.1992	0.0833
California Water Service Group	0.75	0.62	2.6641	0.1010
Middlesex Water Co.	0.80	0.63	3.1066	0.1177
York Water Co.	0.80	0.67	3.2949	0.1249
Average	<u>0.74</u>	<u>0.58</u>	<u>2.6821</u>	<u>0.1016</u>
Beta Range (+/- 2 std. Devs. of Beta)	0.38	0.78		
2 std. Devs. of Beta	0.20			
Residual Std. Err. Range (+/- 2 std. Devs. of the Residual Std. Err.)	2.4465	2.9177		
Std. dev. of the Res. Std. Err.	0.1178			
2 std. devs. of the Res. Std. Err.	0.2356			

Source of Information: Valueline Proprietary Database, March 2018

SUEZ Water Pennsylvania Inc.
Proxy Group of Non-Price Regulated Companies
Comparable in Total Risk to the
Proxy Group of Six Water Companies

	[1]	[2]	[3]	[4]
<u>Proxy Group of Seventeen Non-Price Regulated Companies</u>	<u>VL Adjusted Beta</u>	<u>Unadjusted Beta</u>	<u>Residual Standard Error of the Regression</u>	<u>Standard Deviation of Beta</u>
ABM Industries Inc.	0.80	0.67	2.5536	0.0968
AutoZone Inc.	0.80	0.69	2.6223	0.0994
Cheesecake Factory	0.75	0.55	2.7238	0.1032
CBOE Holdings	0.70	0.49	2.5467	0.0965
Chemed Corp.	0.80	0.63	2.9158	0.1105
C.H. Robinson	0.85	0.71	2.6970	0.1022
Cigna Corp.	0.85	0.76	2.7306	0.1035
Darden Restaurants	0.85	0.74	2.7669	0.1049
DaVita Inc.	0.85	0.77	2.7539	0.1044
Forrester Research	0.70	0.48	2.6673	0.1011
Hormel Foods	0.75	0.56	2.5540	0.0968
IQVIA Holdings	0.85	0.75	2.5724	0.0989
Mercury General	0.80	0.62	2.4507	0.0929
Vail Resorts	0.80	0.69	2.5050	0.0949
Pinnacle Foods	0.80	0.66	2.5411	0.0973
Spectrum Brands	0.85	0.70	2.8926	0.1096
West Pharmac. Svcs.	0.85	0.74	2.6305	0.0997
Average	0.80	0.66	2.6500	0.1000
Proxy Group of Six Water Companies	0.74	0.58	2.6821	0.1016

Source of Information:

Valueline Proprietary Database, March 2018

SUEZ Water Pennsylvania Inc.
Summary of Cost of Equity Models Applied to
Proxy Group of Seventeen Non-Price Regulated Companies
Comparable in Total Risk to the
Proxy Group of Six Water Companies

<u>Principal Methods</u>	<u>Proxy Group of Seventeen Non- Price Regulated Companies</u>
Discounted Cash Flow Model (DCF) (1)	14.15 %
Risk Premium Model (RPM) (2)	12.46
Capital Asset Pricing Model (CAPM) (3)	<u>11.78</u>
	Mean <u>12.80</u> %
	Median <u>12.46</u> %
	Average of Mean and Median <u>12.63</u> %

Notes:

- (1) From page 2 of this Schedule.
- (2) From page 3 of this Schedule.
- (3) From page 6 of this Schedule.

SUEZ Water Pennsylvania Inc.
 DCF Results for the Proxy Group of Non-Price-Regulated Companies Comparable in Total Risk to the
Proxy Group of Six Water Companies

	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]
Proxy Group of Seventeen Non-Price Regulated Companies	Average Dividend Yield	Value Line Projected Five Year Growth in EPS	Reuters Mean Consensus Projected Five Year Growth Rate in EPS	Zack's Five Year Projected Growth Rate in EPS	Yahoo! Finance Projected Five Year Growth in EPS	Average Projected Five Year Growth Rate in EPS	Adjusted Dividend Yield	Indicated Common Equity Cost Rate (1)
ABM Industries Inc.	1.91 %	15.00 %	16.00 %	NA %	16.00 %	15.67 %	2.06 %	17.73 %
AutoZone Inc.	-	11.50	11.68	12.70	11.68	11.89	-	NA
Cheesecake Factory	2.42	7.00	10.88	14.40	10.88	10.79	2.55	13.34
CBOE Holdings	0.89	16.50	17.90	17.60	17.90	17.48	0.97	18.45
Chemed Corp.	0.42	13.50	10.00	10.00	10.00	10.88	0.44	11.32
C.H. Robinson	2.00	9.50	9.86	9.00	9.86	9.56	2.10	11.66
Cigna Corp.	0.02	12.50	13.92	12.90	13.92	13.31	0.02	13.33
Darden Restaurants	2.66	13.00	13.52	10.90	13.53	12.74	2.83	15.57
DaVita Inc.	-	9.00	23.74	16.80	23.74	18.32	-	NA
Forrester Research	1.88	8.00	12.00	12.00	12.00	11.00	1.98	12.98
Hormel Foods	2.22	10.50	NA	9.30	0.53	6.78	2.30	9.08
IQVIA Holdings	-	14.50	16.65	13.80	16.15	15.28	-	NA
Mercury General	5.25	14.00	25.30	25.30	25.30	22.48	5.84	28.32
Vail Resorts	2.68	18.00	23.70	NA	23.70	21.80	2.97	24.77
Pinnacle Foods	2.25	10.50	9.60	8.00	9.60	9.43	2.36	11.79
Spectrum Brands	1.56	12.00	5.05	14.60	5.05	9.18	1.63	10.81
West Pharmac. Svcs.	0.60	14.00	10.20	13.70	10.20	12.03	0.64	12.67
							Mean	<u>15.13 %</u>
							Median	<u>13.16 %</u>
							Average of Mean and Median	<u>14.15 %</u>

NA= Not Available

NMF= Not Meaningful Figure

(1) The application of the DCF model to the domestic, non-price regulated comparable risk companies is identical to the application of the DCF to the utility proxy group. The dividend yield is derived by using the 60 day average price and the spot indicated dividend as of March 30, 2018. The dividend yield is then adjusted by 1/2 the average projected growth rate in EPS, which is calculated by averaging the 5 year projected growth in EPS provided by Value Line, www.reuters.com, www.zacks.com, and www.yahoo.com (excluding any negative growth rates) and then adding that growth rate to the adjusted dividend yield.

Source of Information: Value Line Investment Survey
 www.reuters.com Downloaded on 03/29/2018
 www.zacks.com Downloaded on 03/29/2018
 www.yahoo.com Downloaded on 03/29/2018

SUEZ Water Pennsylvania Inc.
Indicated Common Equity Cost Rate
Through Use of a Risk Premium Model
Using an Adjusted Total Market Approach

<u>Line No.</u>		<u>Proxy Group of Seventeen Non- Price Regulated Companies</u>
1.	Prospective Yield on Baa Rated Corporate Bonds (1)	5.41 %
2.	Equity Risk Premium (2)	<u>7.05</u>
3.	Risk Premium Derived Common Equity Cost Rate	<u><u>12.46 %</u></u>

Notes: (1) Average forecast of Baa corporate bonds based upon the consensus of nearly 50 economists reported in Blue Chip Financial Forecasts dated December 1, 2017 and April 1, 2018 (see pages 10 and 11 of Schedule DWD-4). The estimates are detailed below.

Second Quarter 2018	4.80 %
Third Quarter 2018	5.00
Fourth Quarter 2018	5.10
First Quarter 2019	5.30
Second Quarter 2019	5.40
Third Quarter 2019	5.50
2019-2023	6.00
2024-2028	<u>6.20</u>
Average	<u><u>5.41 %</u></u>

(2) From page 5 of this Schedule.

SUEZ Water Pennsylvania Inc.
Comparison of Long-Term Issuer Ratings for the
Proxy Group of Seventeen Non-Price Regulated Companies of Comparable risk to the
Proxy Group of Six Water Companies

<u>Proxy Group of Seventeen Non-Price Regulated Companies</u>	<u>Moody's Long-Term Issuer Rating March 2018</u>		<u>Standard & Poor's Long-Term Issuer Rating March 2018</u>	
	<u>Long-Term Issuer Rating</u>	<u>Numerical Weighting (1)</u>	<u>Long-Term Issuer Rating</u>	<u>Numerical Weighting (1)</u>
ABM Industries Inc.	NR	--	NR	--
AutoZone Inc.	Baa1	8.0	BBB	9.0
Cheesecake Factory	NR	--	NR	--
CBOE Holdings	Baa1	8.0	BBB+	8.0
Chemed Corp.	WR	--	NR	--
C.H. Robinson	NR	--	BBB+	8.0
Cigna Corp.	Baa1	8.0	A	--
Darden Restaurants	Baa2	9.0	BBB	9.0
DaVita Inc.	Ba3	13.0	BB	12.0
Forrester Research	NR	--	NR	--
Hormel Foods	A1	5.0	A	6.0
IQVIA Holdings	NR	--	BBB-	10.0
Mercury General	Baa2	9.0	NR	--
Vail Resorts	NR	--	NR	--
Pinnacle Foods	NR	--	BB-	13.0
Spectrum Brands	NR	--	NR	--
West Pharmac. Svcs.	NR	--	NR	--
Average	<u>Baa2</u>	<u>8.6</u>	<u>BBB</u>	<u>9.4</u>

Notes:

(1) From page 6 of Schedule DWD-4.

Source of Information:

Bloomberg Professional Services

SUEZ Water Pennsylvania Inc.
Derivation of Equity Risk Premium Based on the Total Market Approach
Using the Beta for
Proxy Group of Seventeen Non-Price Regulated Companies of Comparable risk to the
Proxy Group of Six Water Companies

<u>Line No.</u>	<u>Equity Risk Premium Measure</u>	<u>Proxy Group of Seventeen Non- Price Regulated Companies</u>
<u>Ibbotson-Based Equity Risk Premiums:</u>		
1.	Ibbotson Equity Risk Premium (1)	5.56 %
2.	Regression on Ibbotson Risk Premium Data (2)	7.31
3.	Ibbotson Equity Risk Premium based on PRPM (3)	<u>6.66</u>
4.	Average Ibbotson Equity Risk Premium	<u><u>6.51</u></u>
<u>Value Line-Based Equity Risk Premiums:</u>		
5.	Equity Risk Premium Based on <u>Value Line</u> Summary and Index (4)	4.68
6.	Equity Risk Premium Based on <u>Value Line</u> S&P 500 Companies (5)	<u>11.07</u>
7.	Average <u>Value Line</u> Equity Risk Premium	<u><u>7.87</u></u>
<u>Bloomberg-Based Equity Risk Premium:</u>		
8.	Equity Risk Premium Based on Bloomberg S&P 500 Companies (6)	<u>9.93</u>
9.	Conclusion of Equity Risk Premium (7)	8.10 %
10.	Adjusted Beta (8)	<u>0.87</u>
11.	Forecasted Equity Risk Premium	<u><u>7.05 %</u></u>

Notes:

- (1) From note 1 of page 9 of Schedule DWD-4.
- (2) From note 2 of page 9 of Schedule DWD-4.
- (3) From note 3 of page 9 of Schedule DWD-4.
- (4) From note 4 of page 9 of Schedule DWD-4.
- (5) From note 5 of page 9 of Schedule DWD-4.
- (6) From note 6 of page 9 of Schedule DWD-4.
- (7) Average of lines 4, 7, and 8.
- (8) Average of mean and median beta from page 6 of this Schedule.

Sources of Information:

Stocks, Bonds, Bills, and Inflation - 2017 SBBI Yearbook, John Wiley & Sons, Inc.
Value Line Summary and Index
Blue Chip Financial Forecasts, December 1, 2017 and April 1, 2018
Bloomberg Professional Services

SUEZ Water Pennsylvania Inc.

Traditional CAPM and ECAPM Results for the Proxy Group of Non-Price-Regulated Companies Comparable in Total Risk to the
Proxy Group of Six Water Companies

	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]
<u>Proxy Group of Seventeen Non-Price Regulated Companies</u>	<u>Value Line Adjusted Beta</u>	<u>Bloomberg Beta</u>	<u>Average Beta</u>	<u>Market Risk Premium (1)</u>	<u>Risk-Free Rate (2)</u>	<u>Traditional CAPM Cost Rate</u>	<u>ECAPM Cost Rate</u>	<u>Indicated Common Equity Cost Rate (3)</u>
ABM Industries Inc.	0.80	1.17	0.98	9.12 %	3.69 %	12.63 %	12.67 %	12.65 %
AutoZone Inc.	0.80	0.83	0.81	9.12	3.69	11.08	11.51	11.29
Cheesecake Factory	0.75	0.96	0.86	9.12	3.69	11.53	11.85	11.69
CBOE Holdings	0.70	1.11	0.91	9.12	3.69	11.99	12.19	12.09
Chemed Corp.	0.80	0.97	0.89	9.12	3.69	11.81	12.06	11.93
C.H. Robinson	0.85	0.90	0.87	9.12	3.69	11.62	11.92	11.77
Cigna Corp.	0.85	0.91	0.88	9.12	3.69	11.72	11.99	11.85
Darden Restaurants	0.85	0.91	0.88	9.12	3.69	11.72	11.99	11.85
DaVita Inc.	0.85	0.94	0.89	9.12	3.69	11.81	12.06	11.93
Forrester Research	0.70	1.06	0.88	9.12	3.69	11.72	11.99	11.85
Hormel Foods	0.75	0.61	0.68	9.12	3.69	9.89	10.62	10.26
IQVIA Holdings	0.85	1.07	0.96	9.12	3.69	12.45	12.54	12.49
Mercury General	0.80	0.93	0.87	9.12	3.69	11.62	11.92	11.77
Vail Resorts	0.80	0.93	0.87	9.12	3.69	11.62	11.92	11.77
Pinnacle Foods	0.80	0.71	0.75	9.12	3.69	10.53	11.10	10.82
Spectrum Brands	0.85	0.70	0.78	9.12	3.69	10.80	11.31	11.05
West Pharmac. Svcs.	0.85	0.92	0.88	9.12	3.69	11.72	11.99	11.85
Mean			<u>0.86</u>			<u>11.54 %</u>	<u>11.86 %</u>	<u>11.70 %</u>
Median			<u>0.88</u>			<u>11.72 %</u>	<u>11.99 %</u>	<u>11.86 %</u>
Average of Mean and Median			<u>0.87</u>			<u>11.63 %</u>	<u>11.93 %</u>	<u>11.78 %</u>

Notes:

- (1) From Schedule DWD-5, note 1.
- (2) From Schedule DWD-5, note 2.
- (3) Average of CAPM and ECAPM cost rates.

SUEZ Water Pennsylvania Inc.
Derivation of Investment Risk Adjustment Based upon
Ibbotson Associates' Size Premia for the Decile Portfolios of the NYSE/AMEX/NASDAQ

<u>Line No.</u>		[1]		[2]	[3]	[4]
		Market Capitalization on March 29, 2018 (1)		Applicable Decile of the NYSE/AMEX/NASDAQ (2)	Applicable Size Premium (3)	Spread from Applicable Size Premium (4)
		(millions)	(times larger)			
1.	<u>SUEZ Water Pennsylvania Inc.</u>	\$ 396.361		9	2.68%	
2.	<u>Proxy Group of Six Water Companies</u>	\$ 4,240.418	10.7 x	4	0.98%	1.70%

	[A]	[B]	[C]	[D]	[E]
	Decile	Number of Companies	Recent Total Market Capitalization (millions)	Recent Average Market Capitalization (millions)	Size Premium (Return in Excess of CAPM)
Largest	1	191	\$15,290,475.30	\$80,054.84	-0.35%
	2	200	\$3,010,671.02	\$15,053.36	0.61%
	3	202	\$1,609,575.62	\$7,968.20	0.89%
	4	221	\$1,010,851.81	\$4,573.99	0.98%
	5	227	\$677,120.07	\$2,982.91	1.51%
	6	259	\$541,038.00	\$2,088.95	1.66%
	7	283	\$384,129.20	\$1,357.35	1.72%
	8	361	\$297,164.94	\$823.17	2.08%
	9	487	\$212,609.64	\$436.57	2.68%
Smallest	10	790	\$92,882.17	\$117.57	5.59%

*From 2017 Stocks, Bonds, Bills, and Inflation (SBBBI) Yearbook

Notes:

- (1) From page 2 of this Schedule.
- (2) Gleaned from Column (D) on the bottom of this page. The appropriate decile (Column (A)) corresponds to the market capitalization of the proxy group, which is found in Column 1.
- (3) Corresponding risk premium to the decile is provided on Column (E) on the bottom of this page.
- (4) Line No. 1 Column 3 - Line No. 2 Column 3. For example, the 1.70% in Column 4, Line No. 2 is derived as follows $1.70\% = 2.68\% - 0.98\%$.

SUEZ Water Pennsylvania Inc.
Market Capitalization of SUEZ Water Pennsylvania Inc. and
Proxy Group of Six Water Companies

Company	Exchange	[1] Common Stock Shares Outstanding at Fiscal Year End 2017 (millions)	[2] Book Value per Share at Fiscal Year End 2017 (1)	[3] Total Common Equity at Fiscal Year End 2017 (millions)	[4] Closing Stock Market Price on March 29, 2018	[5] Market-to- Book Ratio on March 29, 2018 (2)	[6] Market Capitalization on March 29, 2018 (3) (millions)
SUEZ Water Pennsylvania Inc.		NA	NA	\$ 131.901 (4)	NA		
Based upon Proxy Group of Six Water Companies						300.5 (5)	\$ 396.361 (6)
<u>Proxy Group of Six Water Companies</u>							
American States Water Co.	NYSE	36.681	\$ 14.447	\$ 529.945	\$ 53.060	367.3 %	\$ 1,946.283
American Water Works Company Inc	NYSE	178.445	30.177	\$ 5,385.000	82.130	272.2	14,655.651
Aqua America Inc	NYSE	177.714	11.016	\$ 1,957.621	34.060	309.2	6,052.937
California Water Service Group	NYSE	48.012	14.443	\$ 693.462	37.250	257.9	1,788.463
Middlesex Water Co.	NASDAQ	16.352	14.015	\$ 229.175	36.700	261.9	600.118
York Water Co.	NASDAQ	12.873	9.276	\$ 119.405	31.000	334.2	399.055
Average		78.346	\$ 15.562	\$ 1,485.768	\$ 45.700	300.5 %	\$ 4,240.418

NA= Not Available

- Notes: (1) Column 3 / Column 1.
(2) Column 4 / Column 2.
(3) Column 1 * Column 4.
(4) Equals the recommended rate base multiplied by the recommended common equity ratio.
(5) The market-to-book ratio of SUEZ Water Pennsylvania Inc. on March 29, 2018 is assumed to be equal to the market-to-book ratio of Proxy Group of Six Water Companies on March 29, 2018.
(6) SUEZ Water Pennsylvania Inc.'s common stock, if traded, would trade at a market-to-book ratio equal to the average market-to-book ratio at March 29, 2018 of the Proxy Group of Six Water Companies, 300.5%, and SUEZ Water Pennsylvania Inc.'s market capitalization on March 29, 2018 would therefore have been \$396.36 million.

Source of Information: 2017 Annual Forms 10K
Bloomberg Financial Services

PENNSYLVANIA PUBLIC UTILITY COMMISSION

v.

SUEZ WATER PENNSYLVANIA INC.

Docket No. R-2018-3000834

Rebuttal Testimony

of

**Dylan W. D'Ascendis, Director
ScottMadden, Inc.**

Concerning SUEZ Water Pennsylvania Inc.'s

Cost of Common Equity

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1 **Introduction and Purpose**

2 **Q. PLEASE STATE YOUR NAME, OCCUPATION AND BUSINESS ADDRESS.**

3 A. My name is Dylan W. D'Ascendis. My business address is 3000 Atrium Way, Suite 241,
4 Mount Laurel, NJ 08054.

5 **Q. ARE YOU THE SAME DYLAN W. D'ASCENDIS WHO PREVIOUSLY**
6 **SUBMITTED PREPARED DIRECT TESTIMONY IN THIS PROCEEDING?**

7 A. Yes.

8 **Q. WHAT IS THE PURPOSE OF YOUR REBUTTAL TESTIMONY?**

9 A. My rebuttal testimony responds to the direct testimonies of Mr. D.C. Patel, witness for
10 the Bureau of Investigation & Enforcement ("I&E") and Mr. Aaron L. Rothschild,
11 witness for the Office of Consumer Advocate ("OCA"), concerning the investor required
12 return on common equity ("ROE") of SUEZ Water Pennsylvania Inc. ("SUEZ PA" or the
13 "Company").

14 **Q. HAVE YOU PREPARED AN EXHIBIT WHICH SUPPORTS YOUR REBUTTAL**
15 **TESTIMONY?**

16 A. Yes. My analyses and conclusions are supported by the data presented in Exhibit No. 5,
17 Schedules DWD-9 through DWD-17.

18 **Q. PLEASE PROVIDE AN OVERVIEW OF THE KEY ISSUES AND**
19 **RECOMMENDATIONS ADDRESSED IN YOUR REBUTTAL TESTIMONY.**

20 A. SUEZ PA's proposed return on common equity ("ROE") should not be reduced as the
21 I&E and OCA witnesses recommend. In particular, I respond to Mr. Patel's estimation of
22 the Company's ROE using the Discounted Cash Flow ("DCF") model and explain its
23 shortcomings, including:

- 1 • His failure to consider ROE model results other than the DCF model;
- 2 • His reliance on the DCF despite its limiting assumptions;
- 3 • His misapplication of the Capital Asset Pricing Model (“CAPM”), which he
- 4 used to check his DCF results; and
- 5 • His failure to account for and reflect SUEZ PA’s size-specific risks.

6 I also respond to Mr. Rothschild’s common equity analysis and recommendations
7 regarding:

- 8 • His failure to consider ROE model results other than the DCF model;
- 9 • His reliance on the DCF despite its limiting assumptions;
- 10 • His misunderstanding of capital market conditions; and
- 11 • His failure to account for and reflect SUEZ PA’s size-specific risks.

12 My response also addresses the unfounded critiques of my direct testimony by the
13 witnesses for I&E and OCA and the unreasonably low ROE they advocate. I also explain
14 why their recommendations would undermine regulatory and financial stability for SUEZ
15 PA and making it more difficult for it to compete effectively in the capital markets it must
16 access to finance essential investments.

17 **Response to I&E’s Mr. D.C. Patel**

18 **Q. WHAT ARE MR. PATEL’S RECOMMENDATIONS REGARDING THE COST**
19 **OF CAPITAL FOR SUEZ PA IN THIS PROCEEDING?**

20 **A.** Mr. Patel recommends that the Pennsylvania Public Utility Commission (“PA PUC” or
21 the “Commission”) authorize an overall weighted average cost of capital (“WACC”) of
22 7.08%, including a capital structure consisting of 45.82% long-term debt at an embedded

1 debt cost rate of 4.65% and 54.18% common equity at his recommended ROE of 9.13%.¹

2 His recommended ROE of 9.13% is solely dependent on the results of his DCF model.²

3 **Q. IN WHAT KEY AREAS ARE MR. PATEL'S ANALYSES AND**
4 **RECOMMENDATIONS INCORRECT OR UNSUPPORTED?**

5 A. Contrary to how the Commission recently determined the return on equity recently for
6 water companies,³ Mr. Patel's recommendation inappropriately places sole weight on the
7 results of one model, the DCF. He does this despite the tendency of the DCF to mis-
8 specify investor-required return when market-to-book ("M/B") ratios are not at unity and
9 which are currently significantly above their historical averages.

10 Even though Mr. Patel applies the CAPM as a check on his DCF results, his
11 assumptions regarding the risk-free rate and market risk premium ("MRP") are incorrect,
12 serving to misrepresent the actual cost of capital when using the CAPM.

13 Mr. Patel also fails to reflect the unique risks of SUEZ PA relative to the proxy
14 group.

15 I also disagree with his criticisms to my analysis including the use of the Risk
16 Premium Model ("RPM") and use of a non-regulated proxy group to determine an
17 appropriate ROE for SUEZ PA.

¹ I would note that Mr. Patel has accepted the Company requested capital structure and long-term debt cost rate in this proceeding.

² Patel Direct Testimony, at 22-23.

³ Docket No. R-2013-2360798 (Columbia Water Company), and Docket No. R-2014-2402324 (Emporium Water Company)

1 Reliance on DCF Results

2 Q TO WHAT EXTENT DOES MR. PATEL'S RECOMMENDED ROE RELY ON
3 HIS DCF MODEL?

4 A. Mr. Patel relies exclusively on his DCF model result of 9.13% for his recommendation
5 for the cost of common equity for SUEZ PA in this proceeding. As discussed in my
6 direct testimony,⁴ the use of multiple models adds reliability to the estimation of the
7 common equity cost rate, and the prudence of using multiple cost of common equity
8 models is supported in both the financial literature and regulatory precedent.

9 Q. CAN YOU PLEASE PROVIDE SOME EXAMPLES FROM THE FINANCIAL
10 LITERATURE WHICH SUPPORT THE USE OF MULTIPLE COST OF
11 COMMON EQUITY MODELS IN DETERMINING THE INVESTOR-
12 REQUIRED RETURN?

13 A. Yes. In one example, Morin states:

14 Each methodology requires the exercise of considerable judgment on the
15 reasonableness of the assumptions underlying the methodology and on the
16 reasonableness of the proxies used to validate a theory. The inability of
17 the DCF model to account for changes in relative market valuation,
18 discussed below, is a vivid example of the potential shortcomings of the
19 DCF model when applied to a given company. Similarly, the inability of
20 the CAPM to account for variables that affect security returns other than
21 beta tarnishes its use.

22
23 **No one individual method provides the necessary level of precision for**
24 **determining a fair return, but each method provides useful evidence**
25 **to facilitate the exercise of an informed judgment.** Reliance on any
26 single method or preset formula is inappropriate when dealing with
27 investor expectations because of possible measurement difficulties and
28 vagaries in individual companies' market data. (emphasis added)
29

⁴ D'Ascendis Direct Testimony, at 34.

* * *

1
2 The financial literature supports the use of multiple methods. Professor
3 Eugene Brigham, a widely respected scholar and finance academician,
4 asserts^(footnote omitted):
5

6 Three methods typically are used: (1) the Capital Asset
7 Pricing Model (CAPM), (2) the discounted cash flow
8 (DCF) method, and (3) the bond-yield-plus-risk-premium
9 approach. **These methods are not mutually exclusive –**
10 **no method dominates the others**, and all are subject to
11 error when used in practice. Therefore, when faced with
12 the task of estimating a company's cost of equity, we
13 generally use all three methods and then choose among
14 them on the basis of our confidence in the data used for
15 each in the specific case at hand. (emphasis added)
16

17 Another prominent finance scholar, Professor Stewart Myers, in an early
18 pioneering article on regulatory finance, stated^(footnote omitted):

19 Use more than one model when you can. Because
20 estimating the opportunity cost of capital is difficult, **only a**
21 **fool throws away useful information**. That means you
22 should not use any one model or measure mechanically and
23 exclusively. Beta is helpful as one tool in a kit, to be used
24 in parallel with DCF models or other techniques for
25 interpreting capital market data. (emphasis added)
26

27 Reliance on multiple tests recognizes that no single methodology produces
28 a precise definitive estimate of the cost of equity. As stated in Bonbright,
29 Danielsen, and Kamerschen (1988), '*no single or group test or technique*
30 *is conclusive.*' Only a fool discards relevant evidence. (italics in original)
31 (emphasis added)

* * *

32
33 While it is certainly appropriate to use the DCF methodology to estimate
34 the cost of equity, there is no proof that the DCF produces a more accurate
35 estimate of the cost of equity than other methodologies. Sole reliance on
36 the DCF model ignores the capital market evidence and financial theory
37 formalized in the CAPM and other risk premium methods. **The DCF**
38 **model is one of many tools to be employed in conjunction with other**
39 **methods to estimate the cost of equity**. It is not a superior methodology
40 that supplants other financial theory and market evidence. The broad
41 usage of the DCF methodology in regulatory proceedings in contrast to its

1 virtual disappearance in academic textbooks does not make it superior to
2 other methods. The same is true of the Risk Premium and CAPM
3 methodologies. (emphasis added)⁵

4 Finally, Brigham and Gapenski note:

5 In practical work, *it is often best to use all three methods* – CAPM, bond
6 yield plus risk premium, and DCF – and then apply judgment when the
7 methods produce different results. People experienced in estimating
8 equity capital costs recognize that both careful analysis and some very fine
9 judgments are required. It would be nice to pretend that these judgments
10 are unnecessary and to specify an easy, precise way of determining the
11 exact cost of equity capital. Unfortunately, this is not possible. Finance is
12 in large part a matter of judgment, and we simply must face this fact.
13 (italics in original)⁶

14 In the academic literature cited above, three methods are consistently mentioned:
15 the DCF, CAPM, and the Risk Premium Model (“RPM”), all of which I used in my
16 analyses.

17 **Q. CAN YOU ALSO PROVIDE SPECIFIC EXAMPLES WHERE THIS**
18 **COMMISSION HAS CONSIDERED MULTIPLE COST OF COMMON EQUITY**
19 **MODELS?**

20 **A.** Yes. The Commission in Docket No. R-2013-2360798, concerning Columbia Water
21 Company, stated:

22 Based on our review of the testimony, data, and cost models presented, we
23 believe that the evidence in this case supports an ROE finding in the
24 reasonable range of 9.25% to 10.25% using the DCF method as the
25 foundation. The equity-heavy capital structure of Columba indicates that a
26 slightly lower ROE is appropriate. However, the small size of the
27 Company, its management effectiveness, and the results of other ROE
28 models other than the DCF are all reasons to set a higher ROE. Therefore,
29 within our indicated range of reasonableness, we conclude that an ROE of
30 9.75% is appropriate for our ratemaking determinations herein.

⁵ Roger A. Morin, New Regulatory Finance, Public Utilities Reports, Inc., 2006, at 428-431. (“Morin”)
⁶ Eugene F. Brigham and Louis C. Gapenski, Financial Management – Theory and Practice, 4th Ed. (The Dryden Press, 1985) at 256. (“Brigham and Gapenski”)

1 Also, in Docket No. R-2014-2402324 concerning Emporium Water Company, the

2 Commission stated the following:

3 The ALJ recommended that the Commission adopt the Company's
4 proposed return on common equity of 11.05%.^{Footnote Omitted} R.D. at 11.
5 The ALJ explained that the Company's position allows it to pay its debt
6 service, which includes principal payments and interest, and provides a
7 modest return on equity (\$34,000). The ALJ states that I&E's and the
8 OCA's positions fail to meet the standards set by the *Hope* and *Bluefield*
9 by not even allowing the Company to pay their debt service, which may
10 lead to possible default on the loans and the bankruptcy of the Company.
11 R.D. at 35.

12 * * *

13 As discussed, *supra*, the OCA recommends a return of 9.10% as the
14 midpoint of its DCF and CE analyses; I&E recommends a return of 8.89%
15 based on its DCF analyses; and the Company proposes a return of 10.3%,
16 which utilizes its DCF, RP, and CAPM analyses to which the Company
17 adds a size risk adjustment of 75 basis points. Based on our review of the
18 testimony, data, and cost models presented, and considering our adoption
19 of a 60% / 40% hypothetical capital structure, we believe that the range of
20 returns provided in evidence supports an ROE finding of 10.0% for our
21 ratemaking determinations herein.

22 In the Commission Orders cited above, there is clear language that the
23 Commission considers multiple models in its determination of ROE. It is also my
24 interpretation of these Orders that the Commission correctly observes capital market
25 conditions and their effect on the model results in determining a ROE for utility
26 companies. This, in addition to the academic literature cited above, shows that Patel's
27 reasoning behind relying solely on the DCF for his recommended cost of common equity
28 is misplaced.

1 Q. IN ADDITION TO THE ABOVE, WHY IS SOLE RELIANCE ON THE DCF
2 MODEL PROBLEMATIC AT THIS TIME?

3 A. Traditional rate base / rate of return regulation, where a market-based common equity
4 cost rate is applied to a book value rate base, presumes that M/B ratios are at unity or
5 1.00. However, that is rarely the case. Morin states:

6 The third and perhaps most important reason for caution and skepticism is
7 that application of the DCF model produces estimates of common equity
8 cost that are consistent with investors' expected return only when stock
9 price and book value are reasonably similar, that is, when the M/B is close
10 to unity. As shown below, application of the standard DCF model to
11 utility stocks understates the investor's expected return when the market-
12 to-book (M/B) ratio of a given stock exceeds unity. This was particularly
13 relevant in the capital market environment of the 1990s and 2000s where
14 utility stocks were trading at M/B ratios well above unity and have been
15 for nearly two decades. The converse is also true, that is, the DCF model
16 overstates that investor's return when the stock's M/B ratio is less than
17 unity. The reason for the distortion is that the DCF market return is
18 applied to a book value rate base by the regulator, that is, a utility's
19 earnings are limited to earnings on a book value rate base⁷.

20 As he explains, a "simplified" DCF model, like that Mr. Patel uses, assumes an
21 M/B ratio of 1.0 and therefore under- or over-states investors' required return when
22 market value exceeds or is less than book value, respectively. It does so because equity
23 investors evaluate and receive their returns on the market value of a utility's common
24 equity, whereas regulators authorize returns on the book value of common equity. This
25 means that the market-based DCF will produce the total annual dollar return expected by
26 investors, only when market and book values of common equity are equal, a very rare and
27 unlikely situation.

⁷ Morin, at 434.

1 Q. WHY DO MARKET AND BOOK VALUES DIVERGE?

2 A. Market values can diverge from book values for a myriad of reasons including, but not
3 limited to, earnings per share (“EPS”) and dividends per share (“DPS”) expectations,
4 merger / acquisition expectations, interest rates, etc. As noted by Phillips:

5 Many question the assumption that market price should equal book value,
6 believing that 'the earnings of utilities should be sufficiently high to
7 achieve market-to-book ratios which are consistent with those prevailing
8 for stocks of unregulated companies.⁸

9 In addition, Bonbright states:

10 In the first place, commissions cannot forecast, except within wide limits,
11 the effect their rate orders will have on the market prices of the stocks of
12 the companies they regulate. In the second place, *whatever the initial*
13 *market prices may be, they are sure to change not only with the changing*
14 *prospects for earnings, but with the changing outlook of an inherently*
15 *volatile stock market.* In short, market prices are beyond the control,
16 though not beyond the influence of rate regulation. Moreover, even if a
17 commission did possess the power of control, any attempt to exercise it ...
18 would result in harmful, uneconomic shifts in public utility rate levels.
19 (italics added)⁹

20 Q. CAN THE UNDER- OR OVER-STATEMENT OF INVESTORS' REQUIRED
21 RETURN BY THE DCF MODEL BE DEMONSTRATED MATHEMATICALLY?

22 A. Yes. Schedule DWD-9 demonstrates how a market-based DCF cost rate of 9.13%, when
23 applied to a book value substantially below market value, will understate investors'
24 required return on market value. As shown, there is no realistic opportunity to earn the
25 expected market-based rate of return on book value. In Column [A], investors expect a
26 9.13% return on an average market price of \$48.07 for Mr. Patel's proxy group of water
27 utility companies. Column [B] shows that when Mr. Patel's 9.13% return rate is applied

⁸ Charles F. Phillips, The Regulation of Public Utilities, Public Utilities Reports, Inc., 1993, at 395. (“Phillips”)

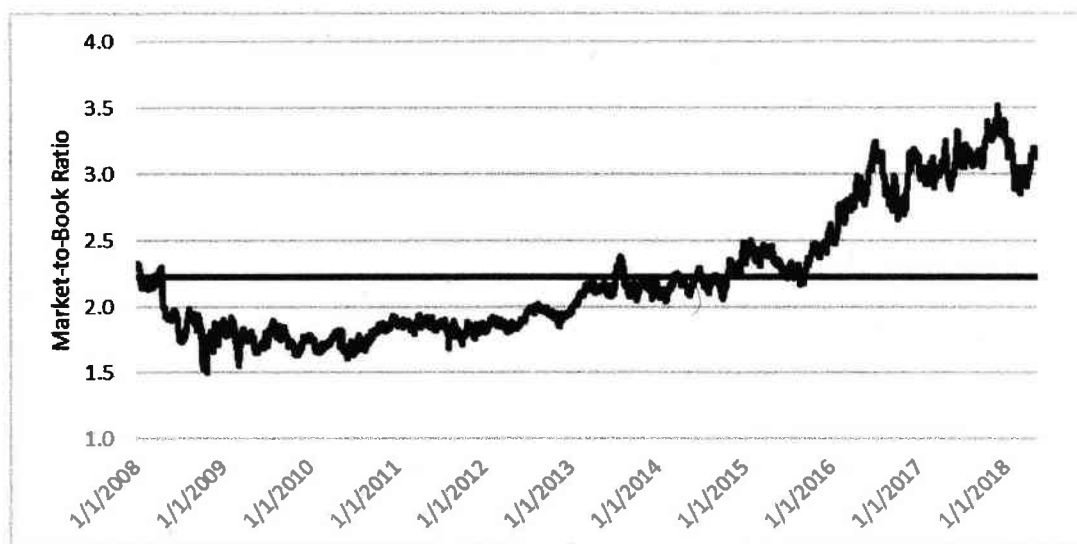
⁹ James C. Bonbright, Albert L. Danielsen and David R. Kamerschen, Principles of Public Utility Rates (Public Utilities Reports, Inc., 1988), at 334. (“Bonbright”)

1 to a book value of \$15.56,¹⁰ the total annual return opportunity is \$1.421. After
 2 subtracting dividends of \$1.096, the investor only has the opportunity for \$0.325 in
 3 market appreciation, or 0.68%. The magnitude of the understatement of investors'
 4 required return on market value using Mr. Patel's 9.13% cost rate is 6.17%, which is
 5 calculated by subtracting the market appreciation based on book value of 0.68% from Mr.
 6 Patel's expected growth rate of 6.85%.

7 **Q. HOW DO M/B RATIOS OF MR. PATEL'S PROXY GROUP COMPARE TO**
 8 **THEIR TEN-YEAR AVERAGE?**

9 A. The M/B ratios of the Mr. Patel's proxy group are currently extraordinarily high
 10 compared to the ten-year average. As shown in Chart 1, below, since early 2016, the M/B
 11 ratios of Mr. Patel's proxy group has increased significantly over their ten-year average
 12 M/B ratio of approximately 2.20 times.

13 **Chart 1: M/B Ratios Compared with Ten-Year Average¹¹**



14
¹⁰ Representing a market-to-book ratio of 308.85%.
¹¹ Source: Bloomberg Financial Services.

1 The significance of this is that even though the ten-year average M/B ratio has
2 always been different than 1.0x, the current M/B ratio is even further removed from 1.0x,
3 further distorting DCF results.

4 **Q. IS THERE ANOTHER WAY TO QUANTIFY THE INACCURACY OF THE DCF**
5 **MODEL WHEN M/B RATIOS ARE DIFFERENT THAN UNITY?**

6 A. Yes. One can quantify the inaccuracy of the DCF model when M/B ratios are not at unity
7 by making a leverage adjustment to the market-value DCF results (based on a market-
8 value capital structure) to reflect a book-value capital structure. This can be measured by
9 first calculating the market value of each proxy company's capital structure, which
10 consists of the market value of the company's common equity (shares outstanding
11 multiplied by price) and the fair value of the company's long-term debt and preferred
12 stock. All of these measures, except for price, are available in each company's SEC Form
13 10-K.

14 Second, one must de-leverage the implied cost of common equity based on the
15 DCF. This is derived using the Modigliani / Miller equation as illustrated in Schedule
16 DWD-10 and shown below:

$$17 \quad k_u = k_e - (((k_u - i)(1 - t)) D/E) - (k_u - d) P/E \text{ [Equation 1]}$$

18 Where:

19 k_u = Unlevered (i.e., 100% equity) cost of common equity;
20 k_e = Market determined cost of common equity;
21 i = Cost of debt;
22 t = Income tax rate;
23 D = Debt ratio;
24 E = Equity ratio;
25 d = Cost of preferred stock; and
26 P = Preferred equity ratio.

1 Using Mr. Patel's average proxy group-specific data, the equation becomes:

$$2 \quad k_u = 9.13\% - (((k_u - 5.25\%)(1 - 21\%)) 23.40\% / 76.54\%) - (k_u - 7.26\%) 0.06\% / 76.54\%$$

3 Solving for k_u results in an unlevered cost of common equity of 8.37%.

4 Next, one must re-lever those costs of common equity by relating them to each
5 proxy group's average book capital structure as shown below:

$$6 \quad k_e = k_u + (((k_u - i)(1 - t)) D/E) + (k_u - d) P/E \text{ [Equation 2]}$$

7 Once again, using Mr. Patel's average proxy group-specific data, the equation becomes:

$$8 \quad k_e = 8.37\% + (((8.37\% - 5.25\%)(1 - 21\%)) 45.27\% / 54.61\%) + (8.37\% - 7.26\%) 0.12\% / 54.61\%$$

9 Solving for k_e results in a 10.42% indicated cost of common equity relative to the
10 book capital structure of the proxy group, which is an increase of 1.29% over Mr. Patel's
11 indicated DCF result of 9.13%. The leverage-adjusted DCF result of 10.42% is still not
12 applicable to SUEZ PA, as it does not reflect the higher risk that the Company faces
13 relative to the proxy group given its smaller size. Additionally, as stated above,
14 consideration of multiple ROE models is necessary to gain further insight into the
15 investor-required return, where the DCF is only one tool among many.

16 **Q. HAS THIS COMMISSION RECOGNIZED THIS TENDENCY OF THE DCF**
17 **MODEL TO UNDER- OR OVERSTATE INVESTORS' REQUIRED RETURN**
18 **WHEN M/B RATIOS ARE NOT AT UNITY?**

19 A. Yes. This Commission recognized this tendency in its order of August 26, 2005 in *The*
20 *City of Lancaster – Sewer Fund*, Docket Nos. R-00049862, et al., when it adopted the
21 Administrative Law Judge's market-to-book adjustment of 65 basis points (0.65%)
22 because such an adjustment was "consistent with our recent orders in *PAWC*, *Aqua*, and

1 *PPL*” and “as in *PPL*, we find that adjustment is necessary because the DCF method
2 produces the investor required return based on the current market price, not the return on
3 the book value capitalization.” With the MTB adjustment, the equity return allowance is
4 10.75 percent. (emphasis added)

5 In 2007, the PA PUC again affirmed the tendency of the DCF model to mis-
6 specify investors’ required return in its Order of February 8, 2007 in *PPL Gas Utilities*
7 *Corporation*, Docket No. R-00061398, et al., when it stated:

8 The ALJ stated that the OTS and the OCA are correct that the Commission
9 favors the DCF method to determine the cost of equity. However, the ALJ
10 concluded, based on recent precedent, that the Commission consistently
11 has adopted a leverage adjustment to compensate for the difference
12 between market prices and book value (used in ratemaking). (See, *Aqua*
13 *Pennsylvania*, 204, 234 (2004); *Pa. PUC v. PPL Electric Utilities Corp.*,
14 Docket No. R-00049255, at 70-71 (2004); *Pa. PUC v. Pennsylvania*
15 *American Water Co.*, 2002 Pa. PUC LEXIS 1; *Pa. PUC v. Phila.*
16 *Suburban Water Co.*, 219 PUR4TH 272 (2002); *Pa. PUC v. Pennsylvania*
17 *American Water Co.*, 231 PUR4TH 277 (2004)). According to the ALJ,
18 these cases are persuasive that a leverage adjustment should be employed
19 with the DCF analysis. (R.D. at 62-63).
20

21 **Q. ARE YOU ADVOCATING A SPECIFIC ADJUSTMENT TO THE DCF RESULTS**
22 **TO CORRECT FOR ITS MIS-SPECIFICATION OF THE INVESTOR-**
23 **REQUIRED RETURN?**

24 A. No. The purpose of this discussion was to demonstrate that like all cost of common
25 equity models, the DCF has its limitations and that the use of multiple cost of common
26 equity models in conjunction with informed expert judgment provides a more accurate
27 and reliable picture of the investor-required ROE than does a narrow evaluation of the
28 results of one model.
29

1 Application of the DCF Model

2 Q. PLEASE DISCUSS MR. PATEL'S APPLICATION OF THE DCF.

3 A. Mr. Patel and I apply the DCF in a similar fashion. We both use a normalized dividend
4 yield, which we then grow by one-half the growth rate, which we obtain by evaluating
5 analyst earnings per share ("EPS") forecasts. We then add that adjusted dividend yield to
6 the analyst projected growth rate in EPS for our indicated ROE based on the DCF model.
7 The only difference between our analyses is the time series used for our dividend yield
8 calculation, which does not significantly affect the DCF result. While our DCF results
9 are similar, it is my opinion that the DCF is not accurately reflecting the investor-required
10 ROE at this time given the reasons explained in detail above.

11 Application of the CAPM

12 Q. PLEASE BRIEFLY SUMMARIZE MR. PATEL'S CAPM METHDOLOGY AND
13 RESULTS.

14 A. Mr. Patel performs two CAPM analyses, one using historical data and one using
15 forecasted data. In both analyses, he uses the average *Value Line* beta of 0.74 for his
16 proxy group.¹² His historical CAPM uses geometric returns for the market and 10-year
17 Treasury bonds from 1953-2017 to calculate his market risk premium ("MRP").¹³ For his
18 forecasted CAPM, Mr. Patel uses the average projected yield for 10-year Treasury Bonds
19 for the six quarters ended in the third quarter of 2019, and years 2019-2023 for his risk
20 free rate.¹⁴ He then uses an average of a projected return forecasted by *Value Line*, and a
21 DCF of the S&P 500, using the S&P 500 dividend yield of 1.98% and growing by the

¹² Patel Direct Testimony, at 28.

¹³ *Ibid.*, at 28-29.

¹⁴ *Ibid.*, at 30-31.

1 projected growth rate for the market of 12.00%.¹⁵ Mr. Patel's historical CAPM result is
2 9.36% and his forecasted CAPM result is 10.48%.

3 **Q. ARE MR. PATEL'S CAPM METHODOLOGY AND RESULTS SOUND?**

4 A. No. Mr. Patel's analysis is flawed in at least three respects: 1) he has incorrectly relied
5 on the yields on 10-year Treasury bonds as his risk-free rate; 2) he has incorrectly relied
6 on geometric mean return data in calculating his MRP; and 3) he does not employ the
7 empirical CAPM ("ECAPM").

8 **Risk-Free Rate**

9 **Q. PLEASE COMMENT ON MR. PATEL'S USE OF 10-YEAR TREASURY BONDS**
10 **AS HIS RISK-FREE RATE IN HIS CAPM ANALYSIS.**

11 A. As discussed below, the tenor of the risk-free rate used in the CAPM should match the
12 life (or duration) of the underlying investment. As noted by Morningstar:

13 The traditional thinking regarding the time horizon of the chosen Treasury
14 security is that it should match the time horizon of whatever is being
15 valued. When valuing a business that is being treated as a going concern,
16 the appropriate Treasury yield should be that of a long-term Treasury
17 bond. Note that the horizon is a function of the investment, not the
18 investor. If an investor plans to hold stock in a company for only five
19 years, the yield on a five-year Treasury note would not be appropriate
20 since the company will continue to exist beyond those five years.¹⁶

21
22 Morin also confirms this when he states:

23 [b]ecause common stock is a long-term investment and because the cash
24 flows to investors in the form of dividends last indefinitely, the yield on
25 very long-term government bonds, namely, the yield on 30-year Treasury
26 bonds, is the best measure of the risk-free rate for use in the CAPM ^{(footnote}
27 omitted)... The expected common stock return is based on long-term cash
28 flows, regardless of an individual's holding time period.¹⁷

15 I&E Exhibit No. 2, Schedule 7, page 3 of 3.

16 Morningstar, Inc., 2013 Ibbotson Stocks, Bonds, Bills and Inflation Valuation Yearbook, at 44.

17 Morin, at 151.

1 Pratt and Grabowski recommend a similar approach to selecting the risk-free rate:

2 “In theory, when determining the risk-free rate and the matching ERP you should be
3 matching the risk-free security and the ERP with the period in which the investment cash
4 flows are expected.”¹⁸ To that point, a 2004 paper titled *Applying The Capital Asset*
5 *Pricing Model* by Robert Harris reviews current practices for application of the CAPM
6 and, when summarizing best current practices, concludes “[t]he risk-free rate should
7 match the tenor of the cash flows being valued.”¹⁹ As a practical matter, equity securities
8 represent a perpetual claim on cash flows; 30-year Treasury bonds are the longest-
9 maturity securities available to match that perpetual claim. Given the requested
10 depreciation rates of 2.31% (fully-forecasted test year), 2.44% (future test year), and
11 2.75% (historical test year) equates to useful lives between 43 and 36 years, Mr. Patel’s
12 use of a medium-term Treasury bond does not match the life of the assets being valued.
13 The use of a 30-year Treasury bond is a more appropriate risk-free rate.

14 **Q. PLEASE DISCUSS MR. PATEL’S PROJECTED RISK-FREE RATE.**

15 A. Mr. Patel and I use the same publication for our forecasted interest rate information, *Blue*
16 *Chip Financial Forecasts* (“*Blue Chip*”). Mr. Patel incorporates forecasts from the third
17 quarter of 2018 out to the period 2019-2023, although forecasts are published by *Blue*
18 *Chip* to the period 2024-2028. Not incorporating the longest projection available is
19 inconsistent with his application of his DCF model in which there is an assumption that
20 the projected “g” is constant into perpetuity, creating a mismatch. It is also inconsistent
21 with the Efficient Market Hypothesis (“EMH”) on which the DCF is based. The semi-

¹⁸ Shannon Pratt and Roger Grabowski, Cost of Capital: Applications and Examples, 3rd Ed. (Hoboken, NJ: John Wiley & Sons, Inc., 2008), at 92. “ERP” is the Equity Risk Premium.

¹⁹ Paper cited with permission of author.

1 strong form of the EMH assumes that all information (including long-term forecasts of
2 interest rates) are available to the investor, which means the 2024-2028 forecasted interest
3 rate would be considered by investors when making investment decisions and, therefore,
4 should be included in Mr. Patel's CAPM analysis.

5 **Use of Geometric Mean Returns**

6 **Q. PLEASE COMMENT ON MR. PATEL'S USE OF THE GEOMETRIC MEAN**
7 **HISTORICAL MARKET RETURN.**

8 A. Only arithmetic mean return rates, equity risk premiums, and yields are appropriate for
9 cost of capital purposes because ex-post (historical) total returns and equity risk
10 premiums differ in size and direction over time. The arithmetic mean captures the
11 prospect for variance in returns and equity risk premiums, providing the valuable insight
12 needed by investors in estimating risk in the *future* when making a *current* investment.
13 Absent such valuable insight into the potential variance of returns, investors cannot
14 meaningfully evaluate prospective risk. The geometric mean of ex-post equity risk
15 premiums provides no insight into the potential variance of future returns, because the
16 geometric mean relates the change over many periods to a constant rate of change, rather
17 than the year-to-year fluctuations, or variance, *critical to risk analysis*. Therefore, the
18 geometric mean is of little or no value to investors seeking to measure risk. Moreover,
19 from a statistical perspective, since stock returns and equity risk premiums are randomly
20 generated, the arithmetic mean is also expectational, consistent with the prospective
21 nature of the cost of capital and ratemaking noted above.

1 The financial literature is quite clear that risk is measured by the variability of
2 expected returns, *i.e.*, the probability distribution of returns.²⁰ Duff & Phelps 2018 SBBI
3 Yearbook: Stocks, Bonds, Bills, and Inflation (“SBBI 2018”)²¹ explains in detail why the
4 arithmetic mean is the correct mean to use when estimating the cost of capital.

5 In addition, Weston and Brigham provide the standard financial textbook
6 definition of the riskiness of an asset when they state:

7 The riskiness of an asset is defined in terms of the *likely variability of*
8 *future returns from the asset.* (emphasis added)²²

9 Furthermore, Morin states:

10 The geometric mean answers the question of *what constant return* you
11 would have to achieve in each year to have your investment growth match
12 the return achieved by the stock market. The arithmetic mean answers the
13 question of what growth rate is the best estimate of the *future* amount of
14 money that will be produced by continually reinvesting in the stock
15 market. It is the rate of return which, compounded over multiple periods,
16 gives the mean of the probability distribution of ending wealth. (emphasis
17 added)²³

18 In addition, Brealey and Myers note:

19 The proper uses of arithmetic and compound rates of return from past
20 investments are often misunderstood... Thus the arithmetic average of the
21 returns correctly measures the opportunity cost of capital for
22 investments... *Moral:* If the cost of capital is estimated from historical
23 returns or risk premiums, use arithmetic averages, not compound annual
24 rates of return. (*italics in original*)²⁴

25 As previously discussed, investors gain insight into relative risk by analyzing
26 expected *future* variability. This is accomplished through the use of the arithmetic mean

²⁰ Eugene F. Brigham, Fundamentals of Financial Management, (The Dryden Press, 1989), at 639.

²¹ SBBI 2018, at p. 10-22.

²² J. Fred Weston and Eugene F. Brigham, Essentials of Managerial Finance, 3rd Edition (The Dryden Press, 1974), at 272.

²³ Morin, at 133.

²⁴ Richard A. Brealey and Stewart C. Myers, Principles of Corporate Finance, 5th Ed. (McGraw-Hill Publications, Inc., 1996), at 146-147. (“Brealey and Myers”)

1 of a random distribution of returns / premiums. Only the arithmetic mean takes into
2 account all of the returns / premiums, hence providing meaningful insight into the
3 variance and standard deviation of those returns / premiums.

4 **Q. CAN IT BE DEMONSTRATED THAT THE ARITHMETIC MEAN TAKES INTO**
5 **ACCOUNT ALL OF THE RETURNS AND, THEREFORE, THAT THE**
6 **ARITHMETIC MEAN IS APPROPRIATE TO USE WHEN ESTIMATING THE**
7 **COST OF CAPITAL IN CONTRAST TO THE GEOMETRIC MEAN?**

8 A. Yes. Pages 1 and 2 of Schedule DWD-11 graphically demonstrate this. Page 1 charts the
9 returns on large company stocks for each and every year, 1926 through 2017 from SBBI
10 2018. It is clear from looking at the year-to-year variation of these returns that stock
11 market returns and, hence, equity risk premiums vary.

12 The distribution of each of those returns for the period from 1926 through 2017 is
13 shown on page 2. There is a clear bell-shaped pattern to the probability distribution of
14 returns, an indication that they are randomly generated and not serially correlated. The
15 arithmetic mean of this distribution of returns considers each and every return in the
16 distribution. In doing so, the arithmetic mean takes into account the standard deviation or
17 likely variance which may be experienced in the future when estimating the rate of return
18 based on such historical returns.

19 In contrast, the geometric mean considers only two of the returns, the initial and
20 terminal years, which, in this case, are 1926 and 2017. Based on only those two years, a
21 constant rate of return is calculated by the geometric average. That constant return is
22 graphically represented by a flat line, showing no year-to-year variation, for the entire
23 1926 to 2017 time period. This is obviously unrealistic, based on the histogram, or

1 probability distribution of returns shown on page 2, and demonstrated on page 1 of
2 Schedule DWD-11. In view of the foregoing, Mr. Patel should have exclusively relied on
3 the long-term arithmetic average return on the market in calculating his historical risk
4 premium using SBBI data.

5 **Failure to Apply the ECAPM**

6 **Q. MR. PATEL DID NOT PERFORM AN ECAPM ANALYSIS. PLEASE**
7 **COMMENT.**

8 A. As discussed in my direct testimony,²⁵ although numerous tests of the CAPM have
9 confirmed its validity, it has been determined that the empirical Security Market Line
10 ("SML") described by the traditional CAPM is not as steeply sloped as the predicted
11 SML. Tests of the CAPM have measured the extent to which security returns and betas
12 are related as predicted by the CAPM, thus confirming its validity.

13 In addition, the Fama and French article cited by Mr. Patel on page 20 of his direct
14 testimony provides similar support for the ECAPM. Fama and French note:

15 Confirming earlier evidence, the relation between beta and average return
16 for the ten portfolios is much flatter than the Sharpe-Linter CAPM
17 predicts. The returns on low beta portfolios are too high, and the returns
18 on the high beta portfolios are too low. For example, the predicted return
19 on the portfolio with the lowest beta is 8.3 percent per year; the actual
20 return is 11.1 percent. The predicted return on the portfolio with the t beta
21 is 16.8 percent per year; the actual is 13.7 percent.²⁶

22 Clearly, then, Fama and French's paper, and their review of the other academic
23 research on the CAPM, validate the use of the ECAPM.

²⁵ D'Ascendis direct testimony, at 27.

²⁶ Eugene F. Fama and Kenneth R. French, "The Capital Asset Pricing Model: Theory and Evidence" in the *Journal of Economic Perspectives*, Summer 2004, Vol. 18 Issue 3, at 25-46

1 Q. WHAT WOULD MR PATEL'S HISTORICAL AND FORECASTED CAPM
2 RESULTS INDICATE IF CORRECTED FOR THE ABOVE?

3 A. As shown in Schedule DWD-12, indicated ROEs of 10.48% and 10.87% would result for
4 the historical and forecasted CAPM analyses, respectively. The average of those results
5 is 10.68%, which is within my recommended range of ROE before adjustment for SUEZ
6 PA's higher risk relative to the proxy group on account of its small size.

7 **Failure to Reflect SUEZ PA's Greater Relative Risk due to its Small Size**

8 Q. DOES MR. PATEL MAKE A SPECIFIC ADJUSTMENT TO REFLECT THE
9 SMALLER SIZE OF SUEZ PA RELATIVE TO THE PROXY GROUP?

10 A. No. As previously discussed in my direct testimony,²⁷ relative company size is a
11 significant element of business risk for which investors expect to be compensated through
12 greater returns. Smaller companies are simply less able to cope with significant events
13 which affect sales, revenues and earnings. For example, smaller companies face more
14 exposure to business cycles and economic conditions, both nationally and locally.
15 Additionally, the loss of revenues from a few large customers would have a far greater
16 effect on a small company than on a larger company with a more diverse customer base.
17 Finally, smaller companies are generally less diverse in their operations and have less
18 financial flexibility. Consistent with the financial principle of risk and return in my direct
19 testimony,²⁸ such increased risk due to small size must be taken into account in the
20 allowed rate of return on common equity.

²⁷ D'Ascendis direct testimony, at 34-36.

²⁸ *Ibid.*, at 8.

1 Q. DOES MR. PATEL RELY ON STUDIES THAT SUPPORT THE SMALL SIZE
2 PREMIUM?

3 A. Yes. In the Fama and French article cited by Mr. Patel on page 20 of his direct testimony,
4 the authors propose that their three-factor model include the SMB (Small Minus Big)
5 factor, which indicated that small capitalization firms are more risky than large
6 capitalization firms,²⁹ confirming that size is a risk factor which must be taken into
7 account in estimating the cost of common equity.

8 Q. IS THERE ANOTHER EMPIRICAL STUDY IN ADDITION TO THE
9 EMPIRICAL ANALYSIS YOU PERFORMED IN YOUR DIRECT TESTIMONY
10 THAT EVALUATES THE EFFECT OF SIZE ON THE COST OF EQUITY?

11 A. Yes. Duff & Phelps' ("D&P") 2017 Valuation Handbook Guide to Cost of Capital –
12 Market Results through 2016 ("D&P 2017") presents a Size Study based on the
13 relationship of various measures of size and return. Relative to the relationship
14 between average annual return and the various measures of size, D&P state:

15 **The size of a company is one of the most important risk elements to**
16 **consider when developing cost of equity estimates for use in valuing a**
17 **firm. Traditionally, researchers have used market value of equity (*i.e.*,**
18 **"market capitalization" or "market cap") as a measure of size in**
19 **conducting historical rate of return research. For example, the Center for**
20 **Research in Security Prices (CRSP) "deciles" are developed by sorting**
21 **U.S. companies by market capitalization. Another example is the Fama-**
22 **French "Small Minus Big" (SMB) series, which is the difference in return**
23 **of "small" stocks minus "big" (*i.e.*, large) stocks, as defined by market**
24 **capitalization. (emphasis added)³⁰**

25 The Size Study uses the following eight measures of size, all of which have
26 empirically shown that over the long-term, the smaller the company, the higher the risk:

²⁹ Fama and French, at. 39.

³⁰ D&P 2017, at p. 10-1.

- 1 ▪ Market Value of Common Equity (or total capital if no debt / equity);
- 2 ▪ Book Value of Common Equity;
- 3 ▪ Net Income (five-year average);
- 4 ▪ Market Value of Invested Capital;
- 5 ▪ Total Assets (Invested Capital);
- 6 ▪ Earnings Before Interest, Taxes, Depreciation & Amortization
- 7 ("EBITDA") (five-year average);
- 8 ▪ Sales / Operating Revenues; and
- 9 ▪ Number of Employees.

10 I used the D&P Size Study to determine the approximate magnitude of any
11 necessary risk premium due to the size of SUEZ PA relative to the water proxy group.
12 Schedule DWD-13 shows the relative size of SUEZ PA compared with the water proxy
13 group. Indicated size adjustments based on these relative measures range from 0.84% to
14 1.56%, averaging 1.26%. From these results, it is clear that SUEZ PA is riskier than the
15 water proxy group due to its small size, and that my proposed size adjustment of 20 basis
16 points for SUEZ PA is conservative.

1 Q. MR. PATEL SAYS THAT YOUR SIZE ADJUSTMENT IS NOT SPECIFIC TO
2 UTILITIES BECAUSE THE STUDY YOU CITE USES DATA FROM THE NEW
3 YORK STOCK EXCHANGE (“NYSE”), AMERICAN STOCK EXCHANGE
4 (“AMEX”) AND NATIONAL ASSOCIATION OF SECURITY DEALERS
5 AUTOMATED QUOTATION SYSTEM (“NASDAQ”). IS THIS A VALID
6 CRITICISM?

7 A. No. While the study does use the data from these exchanges, all utility companies are
8 traded on one of these exchanges, including the proxy group companies. This means that
9 utilities are, indeed, part of the size study I use to derive my size adjustment.

10 Q. MR. PATEL ALSO CITES A STUDY BY DR. ANNIE WONG FOR THE
11 PROPOSITION THAT THERE IS NO SIZE PREMIUM FOR UTILITIES. DOES
12 THIS STUDY ESTABLISH THAT CONTENTION?

13 A. No. Dr. Wong’s study is flawed because she attempts to relate a change in size to beta
14 coefficients, which accounts for only a small percentage of diversifiable company-
15 specific risk. Size is company-specific and therefore diversifiable. For example, the
16 average R-squared, or coefficient of determination for the water proxy group, is 0.1145 as
17 shown on Schedule DWD-14. An R-squared of 0.1145 means that approximately 11% of
18 total risk is explained by beta, leaving 89% unexplained by beta.

19 Q. IS THERE ALSO A PUBLISHED RESPONSE TO DR. WONG’S ARTICLE?

20 A. Yes, there is. In response to Professor Wong’s article, *The Quarterly Review of*
21 *Economics and Finance* published an article in 2003, authored by Thomas M. Zepp,
22 which commented on the Annie Wong article cited by Mr. Patel. Relative to Ms. Wong’s
23 results, Dr. Zepp concluded in the Abstract on page 1 of his article: “Her weak results,

1 however, do not rule out the possibility of a small firm effect for utilities.”³¹ Dr. Zepp
2 also noted on page 582 that: “Two other studies discussed here support a conclusion that
3 smaller water utility stocks are more risky than larger ones. To the extent that water
4 utilities are representative of all utilities, there is support for smaller utilities being more
5 risky than larger ones.”³² Finally, I note that Professor Wong’s study, while relying on a
6 large group of gas and electric utilities, used no water utilities.

7 **Q. ARE YOU AWARE OF ANY OTHER ACADEMIC ARTICLE RELATING TO**
8 **THE APPLICABILITY OF A SIZE PREMIUM?**

9 A. Yes. An article by Michael A. Paschall, ASA, CFA, and George B. Hawkins ASA, CFA,
10 “Do Smaller Companies Warrant a Higher Discount Rate for Risk?” also supports the
11 applicability of a size premium. As the article makes clear, all else equal, size is a risk
12 factor which must be taken into account when setting the cost of capital or capitalization
13 (discount) rate. Paschall and Hawkins state in their conclusion as follows:

14 The current challenge to traditional thinking about a small stock premium
15 is a very real and potentially troublesome issue. The challenge comes
16 from bright and articulate people and has already been incorporated into
17 some court cases, providing further ammunition for the IRS. Failing to
18 consider the additional risk associated with most smaller companies,
19 however, is to fail to acknowledge reality. Measured properly, small
20 company stocks have proven to be more risky over a long period of time
21 than have larger company stocks. This makes sense due to the various
22 advantages that larger companies have over smaller companies. Investors
23 looking to purchase a riskier company will require a greater return on
24 investment to compensate for that risk. There are numerous other risks
25 affecting a particular company, yet the use of a size premium is one way to
26 quantify the risk associated with smaller companies.³³

³¹ Thomas M. Zepp, Thomas M. “Utility Stocks and the Size Effect --- Revisited”, *The Quarterly Review of Economics and Finance*, 43 (2003) at 578-582.

³² *Ibid*, at 578-583

³³ Michael A. Paschall, ASA, CFA and George B. Hawkins ASA, CFA, “Do Smaller Companies Warrant a Higher Discount Rate for Risk?”, *CCH Business Valuation Alert*, Vol. 1, Issue No. 2, December 1999.

1 Hence, Paschall and Hawkins corroborate the need for a small size adjustment, all
2 else equal. Consistent with the financial principle of risk and return discussed previously
3 and the stand-alone nature of ratemaking, an upward adjustment must be applied to the
4 indicated cost of common equity derived from the cost of equity models of the water
5 proxy group used in this proceeding.

6 **Q. DOES THIS COMMISSION CONSIDER SIZE IN DETERMINING THE**
7 **AUTHORIZED ROE?**

8 A. It appears so. In Docket No. R-2013-2360798 (cited above), the Commission stated that
9 the relative size of the company, amongst other factors, was a reason to set a higher ROE
10 than what the DCF results indicated.

11 **Response to Mr. Patel's Criticisms of Company Direct Testimony**

12 **Q. MR. PATEL DOES NOT AGREE WITH YOUR GIVING WEIGHT TO YOUR**
13 **OTHER MODEL RESULTS BESIDES THE DCF.³⁴ PLEASE RESPOND.**

14 A. As discussed in detail previously in this testimony, it is appropriate to rely on multiple
15 cost of common equity models in determining an investor-required return. Since every
16 cost of common equity model has limiting assumptions, considering more relevant data,
17 not less, adds accuracy and reliability to the informed expert judgment needed to
18 determine an appropriate ROE.

19 **Q. MR. PATEL CITES THAT A DISADVANTAGE WITH THE CAPM ANALYSIS**
20 **IS THAT THE ECONOMIC AND REGULATORY CONDITIONS UNDERLYING**
21 **THE HISTORICAL PERIOD DURING WHICH THE RISK PREMIUMS WERE**

³⁴ Patel Direct Testimony, at 32-34.

1 CALCULATED ARE THE SAME TODAY OR WILL BE THE SAME IN THE
2 FUTURE.³⁵ DO HIS CONCERNS APPLY TO YOUR ANALYSIS?

3 A. No. All of my calculated MRPs in my CAPM analysis and all of the ERPs in my RPM
4 analysis are all forward-looking measures.³⁶

5 Q. MR. PATEL ALSO EXPRESSES CONCERNS ABOUT THE RPM NOT BEING
6 ABLE TO MEASURE THE COST OF EQUITY DIRECTLY AND IS NOT
7 COMPANY-SPECIFIC, DUE TO THE LACK OF A BETA COEFFICIENT.
8 PLEASE RESPOND.

9 A. Mr. Patel's concerns are misplaced. The PRPM model used in my RPM analysis
10 measures the risk-return relationship directly using the same company-specific market
11 prices used to derive company-specific beta coefficients. The authors state:

12 The purpose of this paper is to present, test empirically and apply a
13 recently developed general consumption-based asset pricing model that
14 estimates the risk-return relationship directly from asset pricing data and,
15 when estimated with recently developed time-series methods, produces a
16 prediction of the equity risk premium that is driven by its predicted
17 volatility.³⁷
18

19 In addition, my traditional risk premium analysis does apply beta to the indicated
20 ERP to create a company-specific ERP.³⁸

³⁵ Patel Direct Testimony, at 18.

³⁶ D'Ascendis Direct Testimony, at Exhibit No. 5, Schedules DWD-4 and DWD-5.

³⁷ Pauline M. Ahern, Frank J. Hanley, and Richard A. Michelfelder, "A New Approach for Estimating the Equity Risk Premium for Public Utilities", *The Journal of Regulatory Economics*, December 2011, 40:261-278.

³⁸ D'Ascendis Direct Testimony, at 24.

1 Q. MR. PATEL SAYS THAT THE PRPM WAS PUBLISHED IN 2011. DOES THAT
 2 MEAN THAT THE METHODOLOGY BEHIND THE PRPM WAS ALSO
 3 PUBLISHED IN 2011?

4 A. No. As discussed in my Direct Testimony,³⁹ the PRPM is based on the research of
 5 Robert F. Engle, dating back to the early 1980s. Dr. Engle discovered that the volatility
 6 of market prices, returns and risk premiums clusters over time, making prices, returns and
 7 risk premiums highly predictable. In 2003, he shared the Nobel Prize in Economics for
 8 this work, characterized as “methods of analyzing economic time series with time-varying
 9 volatility (“ARCH”).⁴⁰ Dr. Engle⁴¹ noted that relative to volatility, “the standard tools
 10 have become the ARCH / GARCH⁴² models.” Hence, the methodology is not new.

11 In addition, the GARCH methodology has been well tested by academia, since
 12 Engle’s, *et al.* research was originally published in 1982, thirty-six years ago. I use the
 13 well-established GARCH methodology to estimate the PRPM model using a standard
 14 commercial and relatively inexpensive statistical package, EvIEWS,^{©43} to develop a means
 15 by which to estimate a predicted equity risk premium which, when added to a bond yield,
 16 results in a cost of common equity.

17

³⁹ *Ibid.*, at 16.

⁴⁰ www.nobelprize.org.

⁴¹ Robert Engle, “GARCH 101: The Use of ARCH / GARCH Models in Applied Econometrics”, *Journal of Economic Perspectives*, Volume 15, No. 4, Fall 2001, p. 157-168.

⁴² Autoregressive Conditional Heteroskedasticity / Generalized Autoregressive Conditional Heteroskedasticity.

⁴³ In addition to EvIEWS,[®] the GARCH methodology can be applied and the PRPM derived using other standard statistical software packages as SAS, RATS, S-Plus and JMulti, which are not cost-prohibitive. The software that I used in this proceeding EvIEWS,[®] currently costs \$600 - \$700 for a single user commercial license. In addition, JMulti is a free downloadable software with GARCH estimation applications.

1 Also, the PRPM is in the public domain, having been published twice in
2 academically peer-reviewed journals, *The Journal of Regulatory Economics* (December
3 2011) and *The Electricity Journal* (May 2013). Notably, neither article has been rebutted
4 in the academic literature.

5 Finally, the PRPM has also been presented to a number of utility industry /
6 regulatory / academic groups including the following: The Edison Electric Institute Cost
7 of Capital Working Group; The NARUC Staff Subcommittee on Accounting and
8 Finance; The National Association of Electric Companies Finance / Accounting /
9 Taxation and Rates and Regulations Committees; the NARUC Electric Committee; The
10 Wall Street Utility Group; the Indiana Utility Regulatory Commission Cost of Capital
11 Task Force; the Financial Research Institute of the University of Missouri Hot Topic
12 Hotline Webinar; and the Center for Research and Regulated Industries Annual Eastern
13 Conference on two occasions. More recently, the PRPM was presented to the Asset
14 Supervision and Administration Commission of the State Council of the Peoples
15 Republic of China.

16 **Q. MR. PATEL COMMENTED THAT THE PRPM REQUIRES ONE TO HAVE**
17 **ACCESS TO A STATISTICAL PACKAGE TO REPLICATE YOUR RESULTS.**
18 **DID YOU MAKE YOURSELF AND THE STATISTICAL PACKAGE**
19 **AVAILABLE TO BOTH I&E AND OCA DURING THIS PROCEEDING?**

20 **A.** Yes. In response to several requests from I&E in prior proceedings, I have made myself
21 and the statistical package used to derive the PRPM results available to I&E, an offer of
22 which they did not take advantage. I&E did not ask for access to the statistical package in
23 this proceeding.

1 Q. MR. PATEL DOES NOT AGREE WITH YOUR USE OF NON-REGULATED
2 COMPANIES IN YOUR ROE ANALYSIS. IS HIS CONCERN VALID?

3 A. No. The selection criteria for my Non-Utility Proxy Group was based on ranges of two
4 measures of risk, the unadjusted beta of the proxy group, which measures systematic, or
5 market risk, and the standard error of the regression, which gave rise to those betas,
6 measures non-systematic or diversifiable risk. Systematic plus non-systematic risk is one
7 definition of total risk.⁴⁴ Each company I selected for my Non-Utility Proxy Group was
8 required to have an unadjusted beta and a standard error of the regression within the
9 ranges generated by the utility proxy group, as explained in pages 31 and 32 of my direct
10 testimony and on Exhibit No. 5, Schedule DWD-6. Business and financial risks may vary
11 between companies and proxy groups, but if the collective average betas and standard
12 errors of the regression of the group are similar, then the total, or aggregate, non-
13 diversifiable market risks and diversifiable risks are similar, as noted in “Comparable
14 Earnings: New Life for an Old Precept” provided in Schedule DWD-15. Thus, because
15 the non-price regulated companies are selected based on analyses of market data, they are
16 comparable in total risk (even though individual risks may vary) to my water proxy
17 group. This is demonstrated clearly on page 273 of Jack C. Francis’ Investments:
18 Analysis and Management (page 3 of Schedule DWD-16), which shows that total risk can
19 be “partitioned into its systematic and unsystematic components.” Essentially, companies
20 that have similar betas and standard errors of regression have similar total investment
21 risk. Therefore, it is entirely appropriate to rely on the results of the application of the

⁴⁴ Business risk plus financial risk is a second definition of total risk.

1 DCF, RPM and CAPM analyses to the non-price regulated proxy group.

2 **Response to OCA's Mr. Aaron L. Rothschild**

3 **Q. PLEASE PROVIDE A SUMMARY OF MR. ROTHSCHILD'S DIRECT**
4 **TESTIMONY AND RECOMMENDATIONS.**

5 A. Mr. Rothschild agrees with SUEZ PA's recommendations regarding capital structure and
6 long-term debt cost rate,⁴⁵ but does not agree with SUEZ PA's requested cost of common
7 equity. Mr. Rothschild derives an 8.25% cost of common equity based on the results of
8 his constant growth DCF model, using a "non-constant" DCF and "CAPM" as a check on
9 his constant growth DCF results. From his 8.25% DCF result, he deducts 17 basis points
10 for financial risk, which results in his 8.08% recommendation for SUEZ PA.⁴⁶

11 **Q. PLEASE SUMMARIZE THE KEY AREAS WITH WHICH YOU DISAGREE**
12 **WITH MR. ROTHSCHILD'S ANALYSES AND RECOMMENDATIONS.**

13 A. The principal areas in Mr. Rothschild's analyses with which I disagree include the
14 exclusive weighting of his constant growth DCF results, his application of the DCF, his
15 interpretation of current and expected market conditions, his financial risk adjustment,
16 and his failure to recognize the greater operational risk SUEZ PA faces relative to that of
17 his proxy group companies. To narrow the scope of this rebuttal testimony, even though I
18 do not agree with Mr. Rothschild's inputs, application, or reasonableness of his purported
19 "non-constant" DCF model or his "CAPM" methods, I will not address them in this
20 testimony since Mr. Rothschild does not rely on them for his cost of common equity
21 recommendation in this proceeding.

22
⁴⁵ Rothschild direct testimony, at 2.

⁴⁶ *Ibid.*, at 8.

1

2 **Exclusive Weighting of DCF Results**

3 **Q. HAS MR. ROTHSCHILD RELIED EXCLUSIVELY ON HIS CONSTANT**
4 **GROWTH DCF ANALYSIS?**

5 A. Yes. As stated previously in this rebuttal testimony, it is my opinion that the exclusive
6 use of the DCF or any one model is inappropriate based on my discussion above
7 regarding the use of multiple models in a cost of common equity study and the
8 applicability of DCF models in the current economic environment.

9 **Application of the Constant Growth DCF Model**

10 **Q. DO YOU HAVE ANY GENERAL COMMENTS ON MR. ROTHSCHILD'S**
11 **APPLICATION OF THE CONSTANT GROWTH DCF?**

12 A. Yes. Mr. Rothschild's application of the Constant-Growth DCF is flawed because he
13 relied on the sustainable growth methodology to derive the growth rate component in his
14 model.

15 **Q. DO YOU AGREE WITH MR. ROTHSCHILD'S RELIANCE ON SUSTAINABLE**
16 **GROWTH IN HIS CONSTANT-GROWTH DCF ANALYSIS?**

17 A. No. Mr. Rothschild's Constant-Growth DCF growth rate utilizes the sustainable growth
18 ("BR + SV") methodology for determining the growth rate component⁴⁷. Mr. Rothschild
19 calculates sustainable growth based on expected retention of earnings as well as the
20 increase in common shares.

21

⁴⁷ *Ibid.*, at 32-38.

1 In Schedule ALR 3, it is clear that the return on equity (“ROE”) used in Mr.
2 Rothschild’s growth rate analysis is based, in part, on expectations by *Value Line*
3 *Investment Survey* (“*Value Line*”) as well as Zacks 5-year forecasts of earning per share
4 (“EPS”) growth. His allowance for growth caused by the sale of new common stock
5 above book value is based entirely on the expected five-year growth in shares from 2019
6 through 2021 – 2023 from *Value Line*.⁴⁸ Hence, Mr. Rothschild’s sustainable growth
7 methodology is not only a short-term forecast, no longer than the security analysts’ five-
8 year forecasts of EPS growth used in my DCF analysis, but it also relies on analysts’
9 growth forecasts, a practice Mr. Rothschild has criticized.

10 Mr. Rothschild’s sustainable growth methodology is inherently circular because:
11 1) it relies on an expected ROE on book common equity; 2) that expected ROE on book
12 common equity is then used in a DCF analysis to establish an ROE cost rate related to the
13 market value of the common stock; and 3) that market-related ROE, if authorized as the
14 allowed ROE in this proceeding, will become the expected ROE on book common equity.
15 Put simply, the ROEs Mr. Rothschild uses in the derivation of his sustainable growth rate,
16 which are used in a Constant-Growth DCF analysis, the results of which he recommends,
17 become the regulatory outcome of this proceeding and are themselves based on regulatory
18 outcomes. In addition, the resultant conclusion of DCF derived ROE on book common
19 equity of 8.25% is significantly lower than the expected average / median *Value Line*
20 ROE of 12.50%⁴⁹ for his very own proxy group. Note, too, that these *Value Line*
21

⁴⁸ See Schedule ALR 5.

⁴⁹ See Note [A] on Schedule ALR 4, page 1.

1 expected ROEs exceed my recommended range of common equity cost rates of 10.40%
2 to 11.50% and the Company's requested 10.75%.

3 The circularity and inconsistency of Mr. Rothschild's use of the sustainable
4 growth methodology is recognized in the academic literature. Specifically, Morin⁵⁰ states
5 the following:

6 There are three problems in the practical application of the sustainable
7 growth method. The first is that it may be even more difficult to estimate
8 what b , r , s and v investors have in mind than it is to estimate what g is
9 they envisage. It would appear far more economical and expeditious to
10 use available growth forecasts and obtain g directly instead of relying on
11 four individual forecasts of the determinants of such growth. *It seems only*
12 *logical that the measurement and forecasting errors inherent in using four*
13 *different variables to predict growth far exceed the forecasting error*
14 *inherent in the direct forecast of growth itself.*

15
16 *Second, there is a potential element of circularity in estimating g by a*
17 *forecast of b and ROE for the utility being regulated, since ROE is*
18 *determined in large part by regulation. To estimate what ROE resides in*
19 *the minds of investors is equivalent to estimating the market's assessment*
20 *of the outcome of regulatory hearings. Expected ROE is exactly what*
21 *regulatory commissions set in determining an allowed rate of return. In*
22 *other words, the method requires an estimate of return on equity before it*
23 *can even be implemented. Common sense would dictate the inconsistency*
24 *of a return on equity recommendation that is different than the expected*
25 *ROE that the method assumes the utility will earn forever. For example,*
26 *using an expected return on equity of 11% to determine the growth rate*
27 *and using the growth rate to recommend a return on equity of 9% is*
28 *inconsistent. It is not reasonable to assume that this regulatory utility*
29 *company is expected to earn 11% forever, but recommend a 9% return on*
30 *equity. The only way this utility can earn 11% is that rates be set by the*
31 *regulator so that the utility will, in fact, earn 11%....*

32
33 Third, the empirical finance literature discussed earlier demonstrates that
34 the sustainable growth method of determining growth is not as
35 significantly correlated to measures of value, such as stock price and
36 price/earnings ratios, as other historical measures or analysts' growth
37 forecasts. *Other proxies for growth such as historical growth rates and*
38 *analysts' growth forecasts outperform retention growth estimates. (italics*

⁵⁰ Morin at 306-307.

1 added)

2
3 In view of the foregoing, it is clear that Mr. Rothschild's application of the DCF is
4 flawed due to his use of BR + SV, which is an exercise in circularity and ignores the basic
5 principle of rate base / rate of return regulation. That is, it ignores the fact that the cost of
6 equity which will be authorized in this proceeding will be applied to the jurisdictional
7 book value rate base of SUEZ PA and become the allowed future earned return on book
8 common equity, *i.e.*, the expected ROE component of the sustainable growth method.

9 **Q. DO YOU HAVE AN OBSERVATION REGARDING MR. ROTHSCHILD'S**
10 **INPUTS IN HIS BR + SV FORMULA?**

11 A. Yes. On Schedule ALR 5, Mr. Rothschild presents his recommended external financing
12 rate or "S" in his BR + SV formula. As shown on Schedule ALR 5, Mr. Rothschild
13 reduces the projected S from 0.47% to a "sustainable" 0.30%.

14 **Q. IS MR. ROTHSCHILD'S LOWERING OF THE S FACTOR IN THIS**
15 **PROCEEDING CONSISTENT WITH HIS PRIOR PRACTICE IN**
16 **CONCURRENT PROCEEDINGS?**

17 A. No, it is not. In Case No. PU-17-398 concerning Otter Tail Power Company in North
18 Dakota, Mr. Rothschild raised his S factor by approximately four times the level of the
19 electric proxy group's projected share growth from *Value Line* to 1.00%. He increased
20 the S factor in order to reflect the increase in rate base due to the Tax Cuts and Jobs Act
21 of 2017 ("TCJA"), which may or may not have been included in *Value Line* projections.
22 The spot date used in Mr. Rothschild's analysis in Case No. PU-17-398 was 4/30/18, only
23 one month prior to the spot date in his analysis in this proceeding, so increasing the S
24 factor to 1.00% in one case and lowering it to 0.30% in a case a month later is curious.

1 Q. DOES THE TCJA AFFECT THE ELECTRIC UTILITY INDUSTRY
2 DIFFERENTLY THAN THE WATER UTILITY INDUSTRY?

3 A. No. There is no portion of the TCJA that treats electric utility companies differently than
4 water utility companies.

5 Q. ALL ELSE EQUAL, WHAT WOULD MR. ROTHSCHILD'S CONSTANT
6 GROWTH DCF RESULTS BE IF HE WAS CONSISTENT IN APPLYING THE
7 1.00% S FACTOR TO THE WATER PROXY GROUP DATA?

8 A. As shown on Schedule DWD-17, Mr. Rothschild's constant growth DCF results would
9 range from 9.24% to 9.83%, significantly different from his original results, which ranged
10 from 7.61% to 8.27%. The 9.24% to 9.83% indicated results still do not reflect SUEZ
11 PA's increased risk compared to the proxy group based on its small relative size as
12 discussed in my direct testimony.⁵¹

13 Q. YOU HAVE STATED THAT MR. ROTHSCHILD HAS CRITICIZED THE USE
14 OF FORECASTS OF EPS GROWTH IN THE DCF MODEL. PLEASE
15 COMMENT.

16 A. Throughout his direct testimony, Mr. Rothschild is critical of the use of both forecasted
17 growth rates and forecasted interest rates. He specifically states:⁵² "Furthermore,
18 analysts' earnings forecasts used by Mr. D'Ascendis¹¹ (footnote omitted) in his DCF analyses
19 have been shown to be overly optimistic."¹² (footnote omitted)"
20

⁵¹ D'Ascendis direct testimony, at 34-37.

⁵² Rothschild direct testimony, at 6.

1
2 Rate of return analysts must attempt to emulate investor behavior in their rate of
3 return analyses and evaluate those factors that influence investor behavior. Security
4 analysts' forecasted EPS growth rates are one such factor. As discussed previously in my
5 direct testimony,⁵³ and noted by Morin, what is relevant to investor behavior is the fact
6 that security analysts' forecasted EPS growth rates influence investors' pricing decisions.
7 Moreover, both the cost of common equity as well as ratemaking by this Commission are
8 prospective or forward-looking. The cost of common equity is forward-looking as it is a
9 function of investor expectations. Likewise, this Commission's ratemaking is forward-
10 looking as rates set in this proceeding will be in effect in a future period.

11 Mr. Rothschild's criticism of the use of analysts' forecasts also ignores the
12 significant body of empirical evidence indicating the superiority of analysts' EPS growth
13 rates in a DCF analysis and that analysts' forecasts of earnings remain the best predictor
14 of growth to use in the DCF model. Mr. Rothschild has no justification for ignoring such
15 ample evidence of the proven reliability and superiority of analysts' forecasts of EPS.
16 Implicitly, Mr. Rothschild acknowledges as much when he uses an expected dividend
17 yield in his DCF analysis, which is forward looking, using analysts' projected growth
18 rates, in part, to derive the BR + SV growth rate he uses to calculate the expected
19 dividend yield.

⁵³ D'Ascendis direct testimony, at 14-15.

1 Q. PLEASE DESCRIBE SOME OF THE EMPIRICAL EVIDENCE SUPPORTING
2 THE RELIABILITY AND SUPERIORITY OF ANALYSTS' EPS GROWTH
3 RATES IN A DCF ANALYSIS.

4 A. As discussed in my Direct Testimony,⁵⁴ over the long run, there can be no growth in DPS
5 without growth in EPS. While security analysts' earnings expectations are not the only
6 influence on market prices, they have a more significant influence on market prices than
7 dividend expectations. Thus, the use of projected earnings growth rates in a DCF
8 analysis provides a better matching between investors' market price appreciation
9 expectations and the growth rate component of the DCF because projected earnings
10 growth rates have a significant influence on market prices and the appreciation or
11 "growth" experienced by investors.⁵⁵ This should be evident even to relatively
12 unsophisticated investors just by listening to financial news reports on radio, TV or
13 reading the newspapers.

14 In addition, Myron Gordon, the "father" of the standard regulatory version of the
15 DCF model widely utilized throughout the United States in rate base / rate of return
16 regulation, recognized the significance of analysts' forecasts of growth in EPS in a speech
17 he gave in March 1990 before the Institute for Quantitative Research and Finance.⁵⁶ As
18 Professor Gordon stated:⁵⁷

19 We have seen that earnings and growth estimates by security analysts were
20 found by Malkiel and Cragg to be superior to data obtained from financial
21 statements for the explanation of variation in price among common stocks.
22 . . (p. 12)

⁵⁴ *Ibid.*, at 15.

⁵⁵ Morin, at 298-303.

⁵⁶ Myron J. Gordon, "The Pricing of Common Stocks", Presented before the Spring 1990 Seminar, March 27, 1990 of the Institute for Quantitative Research in Finance, Palm Beach Fl.

⁵⁷ *See id.* at 12.

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Professor Gordon recognized that total return is largely affected by the terminal price which is mostly affected by earnings (hence price earnings multiples). However, while EPS is the most significant factor influencing market prices, it is by no means the only factor that affects market prices, as recognized by Bonbright as cited previously.⁵⁸

As Professor Gordon noted, studies performed by Cragg and Malkiel⁵⁹ demonstrate that analysts' forecasts are superior to historical growth rate extrapolations. While some question the accuracy of analysts' forecasts of EPS growth, the level of accuracy of those analysts' forecasts well after the fact does not really matter for our purposes. What is important is that the forecasts reflect widely held expectations influencing investors at the time they make their pricing decisions and hence the market prices they pay.

Jeremy J. Siegel⁶⁰ also notes the importance of security analysts' EPS growth estimates to investors when he states:

For the equity holder, the source of future cash flows is the earnings of firms (p. 90)

* * *

Some people argue that shareholders most value stocks' cash dividends. But this is not necessarily true. (p. 91)

* * *

Since the price of a stock depends primarily on the present discounted value of all expected future dividends, it appears that dividend policy is

⁵⁸ Bonbright, at 334.
⁵⁹ John G. Cragg and Burton G. Malkiel, Expectations and the Structure of Share Prices (University of Chicago Press 1982) Chapter 4.
⁶⁰ Jeremy J. Siegel, Stocks for the Long Run – The Definitive Guide to Financial Market Returns and Long-Term Investment Strategies (McGraw-Hill 2002) at 90-94.

1 crucial to determining the value of the stock. However, this is not
2 generally true. (p. 92)

3 * * *

4 Since stock prices are the present value of future dividends, it would seem
5 natural to assume that economic growth would be an important factor
6 influencing future dividends and hence stock prices. However, this is not
7 necessarily so. The determinants of stock prices are earnings and
8 dividends on a per-share basis. Although economic growth may influence
9 aggregate earnings and dividends favorably, economic growth does not
10 necessarily increase the growth of per-share earnings or dividends. It is
11 earnings per share (EPS) that is important to Wall Street because per-share
12 data, not aggregate earnings or dividends, are the basis of investor returns.
13 (italics in original) (pp. 93-94)
14

15 Moreover, there is no empirical evidence that investors would disregard analysts'
16 estimates of growth in earnings per share. "Do Analyst Conflicts Matter? Evidence From
17 Stock Recommendations"⁶¹ by Anup Agrawal and Mark A. Chen examined whether
18 conflicts of interest with investment banking ("IB") and brokerage businesses induced
19 sell-side analysts to issue optimistic stock recommendations and whether investors were
20 misled by such biases when they state: "our findings do not support the view that
21 conflicted analysts are able to systematically mislead investors with optimistic stock
22 recommendations." (page 503)

23 Agrawal and Chen explain:⁶²

24 Overall, our empirical findings suggest that while analysts do respond to
25 IB and brokerage conflicts by inflating their stock recommendations, the
26 market discounts these recommendations after taking analysts' conflicts
27 into account. These findings are reminiscent of the story of the nail soup
28 told by Brealey and Myers (1991), except that here analysts (rather than
29 accountants) are the ones who put the nail in the soup and investors (rather
30 than analysts) are the ones to take it out. Our finding that the market is not

⁶¹ Anup Agrawal and Mark A. Chen, "Do Analysts' Conflicts Matter? Evidence from Stock Recommendations", *Journal of Law and Economics* (August 2008), Vol. 51 at 503-537.

⁶² *Ibid.*

1 fooled by biases stemming from conflicts of interest echoes similar
2 findings in the literature on conflicts of interest in universal banking (for
3 example, Kroszner and Rajan, 1994, 1997; Gompers and Lerner 1999) and
4 on bias in the financial media (for examples, Bhattacharya et al.
5 forthcoming; Reuter and Zitzewitz 2006). Finally, while we cannot rule
6 out the possibility that some investors may have been naïve, our findings
7 do not support the notion that the marginal investor was systematically
8 misled over the last decade by analysts' recommendations. (page 531)
9

10 Therefore, given the overwhelming academic / empirical support regarding the
11 superiority of security analysts' EPS growth rate forecasts, such EPS growth rate
12 projections should have been relied on by Mr. Rothschild in his DCF analysis.

13 **Current Market Environment**

14 **Q. WHY IS MR. ROTHSCHILD'S 8.25% COMMON EQUITY COST RATE**
15 **BEFORE ADJUSTMENT BASED ON A FLAWED INTERPRETATION OF**
16 **CURRENT MARKET CONDITIONS?**

17 **A. Mr. Rothschild addresses four components of current capital market conditions in his**
18 **direct testimony.⁶³ They are:**

- 19 • Stocks are Expensive (High Price to Earnings ("P/E") Ratios);
- 20 • Interest Rates (Still historically low interest rates);
- 21 • Low Credit Spreads; and
- 22 • Volatility Expectations.

23 I will address each in turn and show that his interpretation that the cost of equity is
24 low and will continue to remain low, is misplaced.

⁶³ Rothschild direct testimony, at 9-11.

1 Q. DOES MR. ROTHCSHILD'S CLAIM THAT STOCKS ARE EXPENSIVE
2 INDICATE THAT THE COST OF EQUITY IS LOWER THAN AVERAGE?

3 A. No. Mr. Rothschild states in his direct testimony⁶⁴ that "favorable economic conditions
4 have led to high price-to-earnings ratios for water utility stocks", which leads him to the
5 opinion that "the cost of equity for water utility companies is at historical lows." Mr.
6 Rothschild is mistaken. Mr. Rothschild fails to recognize a very simple relationship
7 between P/E ratios, growth rates, and the resulting investor expected return. That
8 relationship is that as P/E ratios increase (which lowers dividend yields in the DCF
9 model), prospects for growth increase, which usually keeps the expected return on
10 common equity relatively constant over time, consistent with the principles of the
11 constant growth DCF model. This is consistent with Veerapan Perianan,⁶⁵ cited in Mr.
12 Rothschild's Direct Testimony⁶⁶ and provided in his workpapers, who states:

13 The expansion of P/E ratios could be due to various reasons, including
14 investor optimism about higher future earnings, less aversion to risk and
15 lower interest rates. The rise in P/E ratios boosted average returns for
16 stocks, but it is unrealistic to expect similar P/E growth over the next 10
17 years.
18

19 Q. DOES THE PROXY GROUP DATA REFLECT THE RELATIONSHIP
20 BETWEEN P/E RATIOS AND EXPECTED GROWTH?

21 A. Yes, it does. Table 1 (below) shows the average P/E ratio and expected EPS growth rates
22 of the proxy group in SUEZ PA's last rate case (2015) and in this rate case, provided by
23 *Value Line*. In the 2015 rate case, the average P/E ratio of the proxy group was 23.6 and

⁶⁴ *Ibid.*, at 9.

⁶⁵ Veerapan Perianan, "Why Market Returns May Be Lower in the Future", © Charles Schwab & Co., Inc. March 13, 2017.

⁶⁶ Rothschild direct testimony, at 7, Table 3.

1 its average expected EPS growth rate was 7.0%. In this rate case, the proxy group
 2 average P/E ratio is 31.2 and the average expected EPS growth rate is 8.4%.

3 **Table 1: P/E Ratios and Expected EPS Growth Rates of Proxy Group**
 4 **in 2015 and 2018**

	2015 ⁶⁷			2018 ⁶⁸		
	P/E Ratio	Dividend Yield	EPS Growth	P/E Ratio	Dividend Yield	EPS Growth
Utility Proxy Group	23.6	2.73%	7.0%	31.2	2.00%	8.4%

5
 6 As the Table shows, the proxy group's P/E ratio increases from 2015 to 2018,
 7 which predictably lowers the dividend yield 73 basis points. Because of the increase in
 8 the P/E ratio, there is expectation of higher growth, which is reflected in higher projected
 9 EPS growth rates. If one calculated a constant growth DCF from these data, one would
 10 compute a 9.82%⁶⁹ indicated ROE based on 2015 data and an indicated ROE of 10.48%⁷⁰
 11 based on 2018 data, which indicates an increasing cost of capital, not a decreasing one.
 12

⁶⁷ *Value Line Investment Survey*, Standard Edition, January 16, 2015.

⁶⁸ *Value Line Investment Survey*, Standard Edition, January 12, 2018.

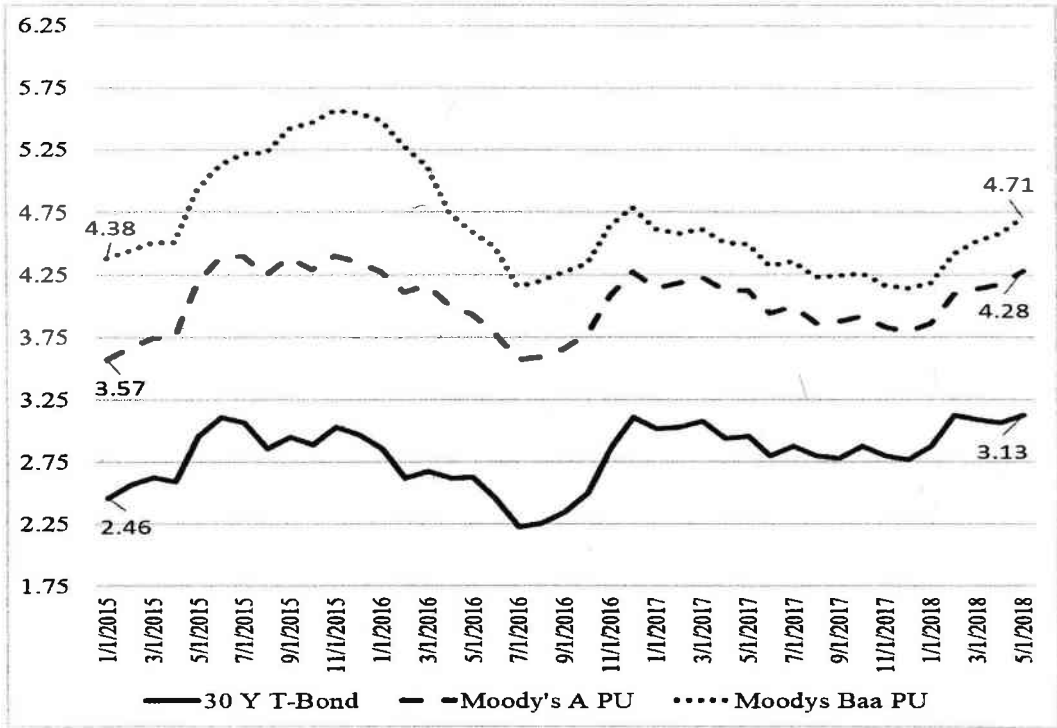
⁶⁹ $2.73\% * (1 + (0.5 * 7.0\%)) + 7.0\% = 9.82\%$

⁷⁰ $2.00\% * (1 + (0.5 * 8.4\%)) + 8.4\% = 10.48\%$

1 Q. PLEASE ADDRESS MR. ROTHSCHILD'S DISCUSSION ON THE CURRENT
2 LEVELS OF INTEREST RATES AND HOW THEY RELATE TO THE COST OF
3 EQUITY.

4 A. Mr. Rothschild correctly points out that the current interest rate is low by historical
5 standards, but he does not recognize that current interest rates are rising and are projected
6 to rise in the future. As shown in Chart 2 (below), measures of the 30-year Treasury
7 bond, Moody's A-rated public utility bonds, and Moody's Baa-rated utility bonds have all
8 increased substantially since SUEZ PA's last rate case (data used in direct case as of
9 January 2015).⁷¹

10 **Chart 2: Measures of Interest Rates since Docket No. R-2015-2462723⁷²**



11
12 Turning to expected interest rates, Mr. Rothschild, in pages 15 through 18 of his

⁷¹ 30 Year T-Bonds increased 67 basis points, Moody's A rated PU bonds increased 71 basis points, and Moody's Baa PU bonds have increased 33 basis points between rate cases.
⁷² Source of information: Bloomberg Financial Services

1 direct testimony, discusses the gradual increase of interest rates over time, as stated by
2 Federal Reserve Chairman Jerome Powell. Currently, the CME Group's FedWatch tool
3 expects the Federal Reserve to raise interest rates at least twice by the end of 2018 (at a
4 68.5% probability),⁷³ which gives the market sentiment to Chairman Powell's statements.

5 A steadily increasing Fed Funds Rate clearly indicates both rising interest rates in
6 the future and an increased cost of equity capital, not flat or decreasing costs of capital,
7 which Mr. Rothschild maintains.

8 **Q. MR. ROTHSCHILD REJECTS THE USE OF PROJECTED INTEREST RATES**
9 **IN HIS ANALYSIS BECAUSE "CURRENT LONG-TERM INTEREST RATES**
10 **REPRESENT A DIRECT OBSERVATION OF INVESTOR EXPECTATIONS".⁷⁴**
11 **PLEASE RESPOND.**

12 A. Mr. Rothschild's statement ignores the important fact that both ratemaking and the cost of
13 capital are prospective in nature, *i.e.*, forward looking, as rates set in this proceeding will
14 be collected over a future time period. Therefore, it is the level of future interest rates
15 which is relevant to the cost of equity for SUEZ PA in this proceeding, not present
16 interest rates.

17 **Q. DOES MR. ROTHSCHILD BELIEVE THAT THE COST OF CAPITAL IS TO BE**
18 **SET ON EXPECTED MARKET CONDITIONS?**

19 A. No, he does not. On page 18 of his direct testimony he states that "SUEZ PA's actual
20 cost of capital is based on the current capital markets, and the Commission should not
21 give weight to forecasts..." Again, on page 26 of his direct testimony, Mr. Rothschild
22

⁷³ <https://www.cmegroup.com/trading/interest-rates/countdown-to-fomc.html>, accessed 8/6/18

⁷⁴ Rothschild direct testimony, at 17.

1 states that “The cost of capital is the return investors require to provide capital to SUEZ
2 PA based on current capital markets.”

3 **Q. IS THERE SUFFICIENT EVIDENCE IN THE FINANCIAL LITERATURE**
4 **THAT MR. ROTHSCHILD IS MISTAKEN IN BELIEVING THAT NOTION?**

5 A. Yes, there is. In Chapter 1, page 1 of D&P 2017, several definitions of the cost of capital
6 are presented:

7 The cost of capital is the *expected* rate of return that the market requires in
8 order to attract funds to a particular investment. – Shannon P. Pratt and
9 Roger J Grabowski, Co-Authors of Cost of Capital, 5th Edition

10 The opportunity cost of capital is one of the most important concepts in
11 finance. For example, if you are a chief finance officer contemplating a
12 possible capital expenditure, you need to know what return you should
13 look to earn from the investment. If you are an investor who needs to plan
14 for future expenditures, you need to ask what return you can *expect* to earn
15 on your portfolio. – Richard Brealey, London Business School

16 The cost of capital is the price charged by investors for bearing the risk
17 that the company’s *future cash flows* may differ from what they
18 *anticipated* when they made the investment – McKinsey

19 The cost of capital may be described in simple terms as the *expected*
20 *return appropriate for the expected level of risk.* (emphasis added)⁷⁵

21 In “Cost of Capital – A Practitioner’s Guide”, author David Parcell, a witness for
22 the OCA in previous proceedings, breaks down the cost of capital into three conceptual
23 meanings:

- 24 1. On the asset side of a firm’s balance sheet, it is the discount rate which
25 should be used to reduce the future value of cash flows derived from
26 the assets to a present value.
- 27 2. On the liability side, it is economic cost to the firm of attracting and
28 retaining capital in a competitive environment where investors (capital
29 providers) carefully analyze and compare all return-generating
30 opportunities.

⁷⁵ D&P 2017, at 1-1.

1 3. To the investor, it is the return one expects and requires from one's
2 investment in a firm's debt or equity.

3 The cost of capital, using any of these meanings, is thus an opportunity
4 cost, which is defined as the highest alternative return on an
5 investment of similar risk. From the perspective of public utility rate
6 regulation, the cost of capital focuses on the second and third
7 conceptual meanings discussed above. (emphasis in original)⁷⁶

8 Phillips says the following about the nature of cost of capital:

9 The most difficult problem in determining the overall cost of capital arises
10 in estimating the cost of equity capital. The relevant question is: How
11 much must a utility earn to induce investors to hold and to continue to buy
12 common stock? In answering this question, it is important to realize that
13 circular reasoning is involved. In the absence of a fixed, expressed or
14 implied commitment as to the dividend rate, the actual cost of floating a
15 stock issue is indeterminate. Investors' decisions are largely on a utility's
16 *expected earnings* and upon their stability, as well as upon other uses of
17 investment funds... There are several approaches for estimating the cost
18 of equity capital, but two methods have evolved in recent years: the
19 "market-determined" standard and the "comparable earnings" standard.¹⁰⁰
20 (footnote omitted) The former is a market-oriented approach that focuses on
21 investor *expectations* in terms of a utility's earnings, dividends, and
22 market prices. The latter is an alternative investment approach that
23 focuses on what capital can earn in various alternatives with comparable
24 risk. (emphasis added)⁷⁷

25 These treatises on the cost of capital show that Mr. Rothschild's contention that
26 the cost of capital is based on current capital markets is misplaced and should be rejected
27 by the Commission.
28

⁷⁶ David C. Parcell, The Cost of Capital – A Practitioner's Guide, 2010 Edition, at 1.
⁷⁷ Phillips, at 394.

1

2 **Q. DOES MR. ROTHSCHILD'S CONTENTION THAT FORECASTED INTEREST**
3 **RATES ARE NOT ACCURATE AFTER THE FACT RELEVANT TO**
4 **INVESTOR'S EXPECTATIONS AT THIS TIME?**

5 A. No. Contrary to Mr. Rothschild's assumption, it is not the accuracy of the forecasts that
6 is relevant, but whether or not investor expectations reflect those forecasts. Investor
7 reaction to analysts' forecasts, whether they be growth rate or interest rate forecasts, can
8 be likened to weather forecasts. For example, typically one prepares for forecasted severe
9 weather, *i.e.*, snowstorms and / or hurricanes, regardless of the historical accuracy of, or
10 any inherent bias in, the weather forecasting. When severe weather is forecasted, those
11 expected to be affected generally begin preparing by storing supplies of food, batteries,
12 candles, etc. If the severe weather does not materialize, apparently that does not stop
13 them from making the same preparations the next time severe weather is predicted.

14 Using Mr. Rothschild's logic regarding forecasts, be they growth or interest rate
15 forecasts, namely that these forecasts are reflected in the market prices investors pay,
16 means that there would be no need to use an expected dividend yield of the growth rate
17 which is added to the expected yield in the application of the DCF model. Financial
18 theory informs us that expectations of future earnings and interest rate levels, in part are
19 evaluated by investors when making their investment decisions. As discussed in my
20 direct testimony:⁷⁸

21 The theory underlying the DCF model is that the present value of an
22 *expected* future stream of net cash flows during the investment holding
23 period can be determined by discounting those cash flows at the cost of

⁷⁸ D'Ascendis direct testimony, at 13.

1 capital, or the investors' capitalization rate. DCF theory assumes that an
2 investor buys a stock for an *expected* total return rate which is derived
3 from cash flows received in the form of dividends plus appreciation in
4 market price (the *expected* growth rate). (italics added)
5

6 The CAPM is defined as an *expected* risk-free rate added to an *expected* market risk
7 premium adjusted by a company or proxy group specific beta to determine the investor's
8 *expected* required return. Mr. Rothschild's "logic" is thus at odds with financial theory,
9 DCF theory and the CAPM.

10 In addition, interest rate forecasts are as market-based as the forecasts of BR + SV
11 and Zacks forecasts of EPS growth relied on by Mr. Rothschild. Moreover, there are
12 approximately 50 economists who contribute to *Blue Chip*, on which I have relied in my
13 common equity cost rate analysis. To suggest that these economists be ignored by the
14 investment community is counter to the Efficient Market Hypothesis ("EMH"), which in
15 its "semi-strong" form postulates that all publicly available information informs investor
16 expectations. The EMH, which is the foundation of modern investment theory, was
17 pioneered by Eugene F. Fama⁷⁹ in 1970. An efficient market is one in which security
18 prices reflect all relevant information all the time, with the implication that prices adjust
19 instantaneously to new information, thus reflecting the intrinsic fundamental economic
20 value of a security.⁸⁰

21 The generally-accepted "semi strong" form of the EMH asserts that all publicly
22 available information is fully reflected in securities prices, *i.e.*, that fundamental analysis
23 cannot enable an investor to "out-perform the market" in the long-run, as noted by

⁷⁹ Eugene F. Fama, "Efficient Capital Markets: A Review of Theory and Empirical Work", 383-417 (Journal of Finance, May 1970).

⁸⁰ Morin, at 279-281.

1 Brealey and Myers.⁸¹ The “semi strong” form of the EMH is generally held to be true
2 because the use of insider information often enables investors to earn excessive returns by
3 “outperforming the market” in the short-run. This means that investors take into account,
4 in the prices they pay for securities, all perceived risks and publicly-available
5 information, such as bond / credit ratings, discussions about companies by bond / credit
6 rating agencies, investment analysts, published information such as growth and interest
7 rate forecasts, as well as the discussions of the various common equity cost rate
8 methodologies (models) in the financial literature. In an attempt, then, to emulate
9 investor behavior, both growth rate and interest rate forecast should be used in the
10 estimation of the common equity cost rate along with the application of multiple cost of
11 common equity cost models.

12 **Q. WHAT IS YOUR RESPONSE TO MR. ROTHSCHILD’S CLAIM THAT A**
13 **CONGRESSIONAL BUDGET OFFICE (“CBO”) REPORT SUPPORTS HIS**
14 **POSITION THAT *BLUE CHIP’S* FORECASTS ARE UPWARDLY BIASED?⁸²**

15 A. The cost of common equity depends on what the market expects, not what has already
16 happened in hindsight. As such, I believe the relevant issue is whether investors are likely
17 to rely on those *Blue Chip* consensus forecasts when making investment decisions. That
18 point aside, the CBO releases a biennial report reviewing its forecasting record. In its
19 most recent Economic Forecasting Record update, the CBO noted its forecasting record
20 was “comparable in quality” and “generally as accurate”⁸³ as *Blue Chip’s*.

⁸¹ Richard A. Brealey and Stewart C. Myers, Principles of Corporate Finance (McGraw-Hill Book Company, 1988) at 329.

⁸² Rothschild Direct, at 20.

⁸³ *CBO’s Economic Forecasting Record: 2017 Update*, October 2017, at 1, 4.

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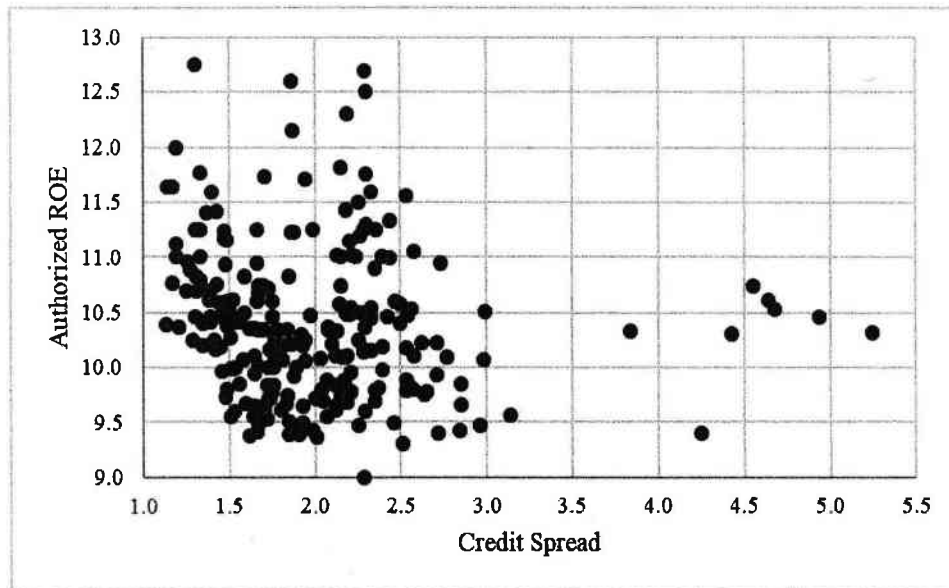
Q. AT PAGE 20 OF HIS DIRECT TESTIMONY, MR. ROTHSCHILD CLAIMS THAT CREDIT SPREADS BETWEEN 20-YEAR TREASURY BONDS AND MOODY'S BAA CORPORATE BONDS IS A PROXY FOR THE COST OF EQUITY. DO YOU AGREE?

A. No, I do not. To test Mr. Rothschild's claim, I incorporated Mr. Rothschild's data in his Chart 6 on page 21 of his direct testimony and added the monthly authorized returns for electric and gas companies from January 1997 through April 2018 to form a scatter plot to see if there was any relationship between credit spreads and the cost of capital. I also estimated the correlation between credit spreads and authorized returns.

Q. WHAT DID THAT ANALYSIS REVEAL?

A. As shown on Chart 3 below, there was no meaningful pattern between credit spreads and authorized ROEs from utility regulatory commissions. When tested for correlation, where -1 is a perfect negative correlation, +1 is perfect positive correlation, and 0 is no correlation, the relationship between credit spreads and authorized ROEs are -0.15, which is categorized as a weak negative correlation. Based on these findings, the Commission should reject Mr. Rothschild's claim that low credit spreads equal low cost of common equity capital.

1 **Chart 3: Scatter Plot of Credit Spreads and Authorized Returns on Common Equity**
 2 **January 1997 through April 2018**



3
 4
 5 **Q. PLEASE DISCUSS MR. ROTHSCHILD'S ASSESSMENT OF THE CURRENT**
 6 **LOW VOLATILITY OF THE OVERALL MARKET AS MEASURED BY THE**
 7 **VIX AND VXV AND THEIR RELATIONSHIP TO THE COST OF EQUITY.**

8 A. Mr. Rothschild notes that the VIX, or "Fear Index", reflects the expected volatility of the
 9 S&P 500 index over the coming 30 days on an annual basis, with the VXV measuring the
 10 market's expectation of three-month volatility.⁸⁴ He then notes that the VIX "is
 11 significantly lower than it was during the financial crisis and is nearing pre-crisis
 12 levels."⁸⁵

13 **Q. DO YOU HAVE ANY OPINION REGARDING THE IMPLICATIONS OF VIX**
 14 **AND VXV THE COST OF EQUITY?**

15 A. Yes, I do. As described by Mr. Rothschild, the VIX measures the expected volatility of

⁸⁴ Rothschild direct testimony, at 22.

⁸⁵ *Ibid.*

1 the S&P 500 30 days into the future. Because the cost of capital is a long-term concept
2 (i.e. perpetuity in the case of the DCF model), VIX and VXV is irrelevant to the cost of
3 common equity in this proceeding.

4 **Q. ARE THERE OTHER LONGER-TERM MEASURES OF EXPECTED**
5 **VOLATILITY THAN THE VIX AND VXV?**

6 A. Yes, there are. The Chicago Board of Options Exchange (“CBOE”), which publishes
7 both the VIX and VXV, also publishes the “Term Structure of Volatility” (“Term
8 Structure”), which provides a measure of expected longer-term volatility, currently
9 through December 2020. Thus, the Term Structure represents a measure of expected
10 volatility longer than either the 30-day VIX or VXV. As of May 31, 2018, per the Term
11 Structure, the expected level of the VIX in December 2020 is 19.88%⁸⁶, which is
12 significantly higher than the 15.43% level cited by Mr. Rothschild.⁸⁷

13

⁸⁶ <http://www.cboe.com/trading-tools/strategy-planning-tools/term-structure-data>

⁸⁷ Rothschild direct testimony, at 22.

1 **Adjustments to the Cost of Common Equity**

2 **Q. MR. ROTHSCHILD DEDUCTS 17 BASIS POINTS FROM HIS DCF RESULT**
3 **FOR THE PERCIEVED DECREASED FINANCIAL RISK OF SUEZ PA**
4 **COMPARED WITH THE PROXY GROUP. DO YOU AGREE WITH HIS**
5 **ADJUSTMENT?**

6 A. No, I do not. As shown on Table 4 on page 8 of his testimony, he is comparing SUEZ
7 PA's equity ratio of 54.18%, which is based on total permanent capital (excluding short-
8 term debt) with the average proxy group capital structure of 49.92%, which is based on
9 total capital (including short-term debt). If Mr. Rothschild correctly compared the equity
10 ratios based on total permanent capital, he would find that the average proxy group equity
11 ratio based is 54.61%, which is comparable to the equity ratio of SUEZ PA.⁸⁸ Mr.
12 Rothschild's financial risk adjustment should be rejected by the Commission.

13 **Q. DOES MR. ROTHSCHILD MAKE A SPECIFIC ADJUSTMENT TO REFLECT**
14 **SUEZ PA'S INCREASED RISK RELATIVE TO THE PROXY GROUP**
15 **BECAUSE OF ITS SMALLER SIZE?**

16 A. No, he does not. As previously discussed in this testimony and in my direct testimony,⁸⁹
17 relative company size is a significant element of business risk for which investors expect
18 to be compensated through greater returns.

⁸⁸ Exhibit No. 5, Schedule DWD-2, at 2.

⁸⁹ D'Ascendis direct testimony, at 34-36.

1 Q. MR. ROTHSCHILD DOES NOT BELIEVE A SIZE ADJUSTMENT IS
2 NECESSARY DUE TO SUEZ PA BEING A PART OF SUEZ
3 ENVIRONMENTAL. IS HIS JUSTIFICATION CONSISTENT WITH THE
4 STAND-ALONE NATURE OF RATEMAKING?

5 A. No. Because it is the rate base of SUEZ PA to which the overall rates of return set in this
6 proceeding will be applied, SUEZ PA should be evaluated as a stand-alone entity. To do
7 otherwise would be discriminatory, confiscatory and inaccurate. It is also a basic
8 financial precept that the use of the funds invested give rise to the risk of the investment.

9 As Brealey and Myers state:

10 The true cost of capital depends on the use to which the capital is put.

11 ***

12
13
14 *Each project should be evaluated at its own opportunity cost of capital;*
15 *the true cost of capital depends on the use to which the capital is put.*
16 (italics and bold in original)⁹⁰

17 Morin confirms Brealey and Myers when he states:

18 Financial theory clearly establishes that the cost of equity is the risk-
19 adjusted opportunity cost of the investors and not the cost of the specific
20 capital sources employed by the investors. The true cost of capital
21 depends on the use to which the capital is put and not on its source. The
22 Hope and Bluefield doctrines have made clear that the relevant
23 considerations in calculating a company's cost of capital are the
24 alternatives available to investors and the returns and risks associated with
25 those alternatives.⁹¹

26 Additionally, Levy and Sarnat state:

27 The firm's cost of capital is the discount rate employed to discount the
28 firm's average cash flow, hence obtaining the value of the firm. It is also
29 the weighted average cost of capital, as we shall see below. The weighted
30 average cost of capital should be employed for project evaluation... only

⁹⁰ Brealey and Myers, at pp. 173, 198.

⁹¹ Morin, at p. 523.

1 in cases where the risk profile of the new projects is a “carbon copy” of the
2 risk profile of the firm⁹²

3 Although Levy and Sarnat discuss a project’s cost of capital relative to a firm’s
4 cost of capital, these principles apply equally to the use of a proxy group-based cost of
5 capital. Each company must be viewed on its own merits, regardless of the source of its
6 equity capital. As *Bluefield* clearly states:

7 A public utility is entitled to such rates as will permit it to earn a return on
8 the value of the property which it employs for the convenience of the
9 public equal to that generally being made at the same time and in the same
10 general part of the country on investments in other business undertakings
11 which are attended by corresponding risks and uncertainties;⁹³

12 In other words, it is the “risks and uncertainties” surrounding the property
13 employed for the “convenience of the public” which determines the appropriate level of
14 rates. In this proceeding, the property employed “for the convenience of the public” is the
15 rate base of SUEZ PA. Thus, it is only the risk of investment in SUEZ PA’s rate base
16 that is relevant to the determination of the cost of common equity to be applied to the
17 common equity-financed portion of that rate base.

18 Consistent with the financial principle of risk and return discussed previously, and
19 the stand-alone nature of ratemaking, an upward adjustment must be applied to the
20 indicated cost of common equity derived from the cost of equity models of the proxy
21 groups used in this proceeding.

⁹² Haim Levy & Marshall Sarnat, Capital Investment and Financial Decisions, Prentice / Hall International, 1986, p. 465.

⁹³ *Bluefield*, p. 6.

1 Response to Mr. Rothschild's Criticisms of Company Testimony

2 **Q. COULD YOU PLEASE SUMMARIZE MR. ROTHSCHILD'S CRITICISMS OF**
3 **YOUR DIRECT TESTIMONY?**

4 A. Mr. Rothschild disagrees with the following portions of my cost of capital analysis:

- 5 1. Use of multiple models in determining my cost of common equity estimate;
- 6 2. Use of a non-regulated proxy group in determining my cost of common equity
7 estimate;
- 8 3. Use of expected growth in EPS in my DCF analysis;
- 9 4. My equity risk premium ("ERP") of 5.80% is out of line with market data;
- 10 5. Use of arithmetic averages in calculating expected risk premiums;
- 11 6. Use of historical data in the PRPM is inferior to his CAPM;
- 12 7. Use of a constant growth DCF on the S&P 500 companies to create an expected
13 return on the market; and
- 14 8. Application of a size adjustment to the proxy group indicated common equity cost
15 rate to reflect SUEZ PA's increased relative risk based on size.

16 Since I have addressed points 1, 2, 3, and 5 either in my comments on his
17 testimony or in response to Mr. Patel's direct testimony, I will not repeat those
18 discussions here. I will address the remaining criticisms in turn.

19 **Q. MR. ROTHSCHILD SAYS THAT YOUR ERP OF 5.80% IS OUT OF LINE WITH**
20 **MARKET DATA. DO YOU AGREE?**

21 A. No, I do not. Based on historical ERPs, an ERP of 5.80% is in the 45th percentile of
22 returns experienced in the period 1928-2017. Given that the historical standard deviation
23 of the market is around 20%, my projected ERP is reasonable and conservative.

1 Q. MR. ROTHSCHILD CLAIMS THAT HIS CAPM IS A BETTER
2 MEASUREMENT OF THE ERP THAN YOUR PRPM. PLEASE RESPOND.

3 A. If Mr. Rothschild had this much confidence in the explanatory power of his “CAPM” one
4 would think that he would have relied on the model, at least in part in deriving his
5 recommended cost of common equity for SUEZ PA, but alas, he did not. From what I
6 can gather from Schedule ALR 7, page 4, his “Security Market Line” is based on returns
7 on bond funds, not the market, which would invalidate any measurement of an ERP,
8 because the debt instrument would be subtracted from the market return, not another bond
9 fund return.

10 The PRPM, on the other hand, is a GARCH model, which has been in practice in
11 finance since the early 1980’s and has been presented in front of regulatory jurisdictions
12 since 2011, being fully accepted by the Administrative Law Judge in Docket No. R-2014-
13 2402324 and by the South Carolina Public Service Commission in Docket No. 2017-292-
14 WS.

15 Q. MR. ROTHSCHILD SAYS THE PROJECTED MARKET RETURNS YOU USED
16 IN YOUR CAPM ANALYSIS IS EXCESSIVE BECAUSE THE DCF WAS NOT
17 BASED ON SUSTAINABLE GROWTH. PLEASE RESPOND.

18 A. Mr. Rothschild points to the expected growth rate for Halliburton to support his claim
19 that my analysis does not reasonably reflect investors’ expectations.⁹⁴ In determining the
20 expected growth rate that underlies the expected market return, the relevant points are
21 twofold: (1) investors rely on analysts’ growth rate projections to frame their investment
22

⁹⁴ Rothschild Direct, at 64.

1 decisions; and (2) because we are estimating the market return, it is the expected return
2 on the 500 companies in aggregate that matters, not the expected return on one or two
3 individual companies.

4 As to the first point, Mr. Rothschild has not shown investors avoid analysts'
5 projections, although he seems to suggest they should. In any case, Mr. Rothschild has
6 provided no empirical evidence that investors would disregard analysts' earnings growth
7 rate projections in favor of his "sustainable growth" method. As stated previously,
8 Agrawal and Chen examined whether conflicts of interest with investment banking and
9 brokerage businesses induced sell-side analysts to issue optimistic stock
10 recommendations and whether investors were misled by any such biases. The authors
11 concluded that their findings "do not support the view that conflicted analysts are able to
12 systematically mislead investors with optimistic stock recommendations".⁹⁵ Therefore,
13 even if it were the case that analysts had been, and continue to be biased, those effects
14 would be reflected in the market prices used to calculate the dividend yield portion of the
15 expected market return.

16 Regarding his second point, whereas Mr. Rothschild points to one company with
17 comparatively high, positive growth rates, he fails to note the fifteen with negative
18 growth rates. Negative growth companies will not exist over the long-term (a company
19 cannot shrink forever), but my approach does not remove them – doing so would
20 introduce an unsupportable (survivorship) bias into the analysis. As Mr. Rothschild
21 points out, when viewing a diversified portfolio, "[u]nanticipated failure is offset by

⁹⁵ Anup Agrawal & Mark A. Chen, *Do Analyst Conflicts Matter? Evidence from Stock Recommendations*, *Journal of Law and Economics*, Vol. 51, at 531 (August 2008).

1 unanticipated success.”⁹⁶ To that point, at any time the market includes both low-growth
2 and high-growth companies, and the expected market return should reflect that reality.

3 My approach does just that.

4 **Conclusion**

5 **Q. SHOULD ANY OR ALL OF THE ARGUMENTS MADE BY THE OPPOSING**
6 **ROE WITNESSES PERSUADE THE COMMISSION TO LOWER THE ROE IT**
7 **APPROVES FOR SUEZ PA BELOW YOUR RECOMMENDATION?**

8 A. No, they should not. An overall cost of weighted average cost of capital between 7.76%
9 and 8.36%, which includes a range of cost of common equity between 10.40% and
10 11.50%, is both reasonable and conservative. It will provide SUEZ PA with sufficient
11 earnings to enable it to attract necessary new capital efficiently and at a reasonable cost.

12 **Q. Does that conclude your rebuttal testimony?**

13 A. Yes. However, I reserve the right to supplement my testimony as additional issues are
14 raised in this litigation.

⁹⁶ Rothschild Direct, at 47. Clarification added. The market index represents a diversified portfolio.



SUEZ Water Pennsylvania Inc.
**Demonstration of the Inadequacy of
a DCF Return Rate Related to Book Value
When Market Value is Greater than Book Value**

<u>Line No.</u>	[A]	[B]
	<u>Based on Mr. Patel's Proxy Group</u>	
	<u>Market Value</u>	<u>Book Value</u>
1. Per Share	\$ 48.07 (1)	\$ 15.56 (2)
2. DCF Cost Rate (3)	9.13%	9.13%
3. Return in Dollars (4)	\$ 4.388	\$ 1.421
4. Dividends (5)	\$ 1.096	\$ 1.096
5. Growth in Dollars (6)	\$ 3.292	\$ 0.325
6. Return on Market Value (7)	9.13%	2.96%
7. Rate of Growth on Market Value (8)	6.85%	0.68%

Notes:

- (1) Average of spot market prices for Mr. Patel's proxy group as shown on I&E Exhibit No. 2, Schedule 4, page 1 of 3.
- (2) Average book value dividing total common equity at year-end 2017 by common shares outstanding at year-end 2017 for each proxy group company.
- (3) DCF cost rate from I&E Exhibit No. 2, Schedule 4, page 3 of 3.
- (4) Line 1 x Line 2.
- (5) Dividends are based on a 2.28% dividend yield, from I&E Exhibit No. 2, Schedule 4, page 1 of 3.
- (6) Line 3 - Line 4.
- (7) Line 3 / Line 1.
- (8) Line 5 / Line 1.

SUEZ Water Pennsylvania Inc.
 Calculation of Indicated DCF Applied to Book Value Capital Structure
 of Mr. Patel's Proxy Group

Un-lever Indicated Market Capital Structure DCF

$$\begin{aligned}
 K_u &= K_e - \left(\left(K_u - i \right) \left(1 - t \right) \frac{D}{E} \right) - \left(K_u - d \right) \frac{P}{E} \\
 K_u &= 9.13\% - \left(\left(K_u - 5.25\% \right) \left(1 - 21\% \right) \frac{23.40\%}{76.54\%} \right) - \left(K_u - 7.26\% \right) \frac{0.06\%}{76.54\%} \\
 K_u &= 9.13\% - \left(\left(K_u - 5.25\% \right) 79.00\% \right) \frac{30.57\%}{76.54\%} - \left(K_u - 7.26\% \right) \frac{0.08\%}{76.54\%} \\
 K_u &= 9.13\% - \left(79.00\% * K_u - 4.1463\% \right) \frac{30.57\%}{76.54\%} - \left(0.08\% * K_u - 0.01\% \right) \\
 K_u &= 9.13\% - \left(24.15\% * K_u - 1.27\% \right) \frac{30.57\%}{76.54\%} - \left(0.08\% * K_u - 0.01\% \right) \\
 K_u &= 9.13\% - 24.15\% * K_u + 1.27\% \frac{30.57\%}{76.54\%} - 0.08\% * K_u + 0.01\% \\
 K_u &= 10.40\% - 24.22\% * K_u \\
 124.22\% * K_u &= 10.40\% \\
 K_u &= 8.37\%
 \end{aligned}$$

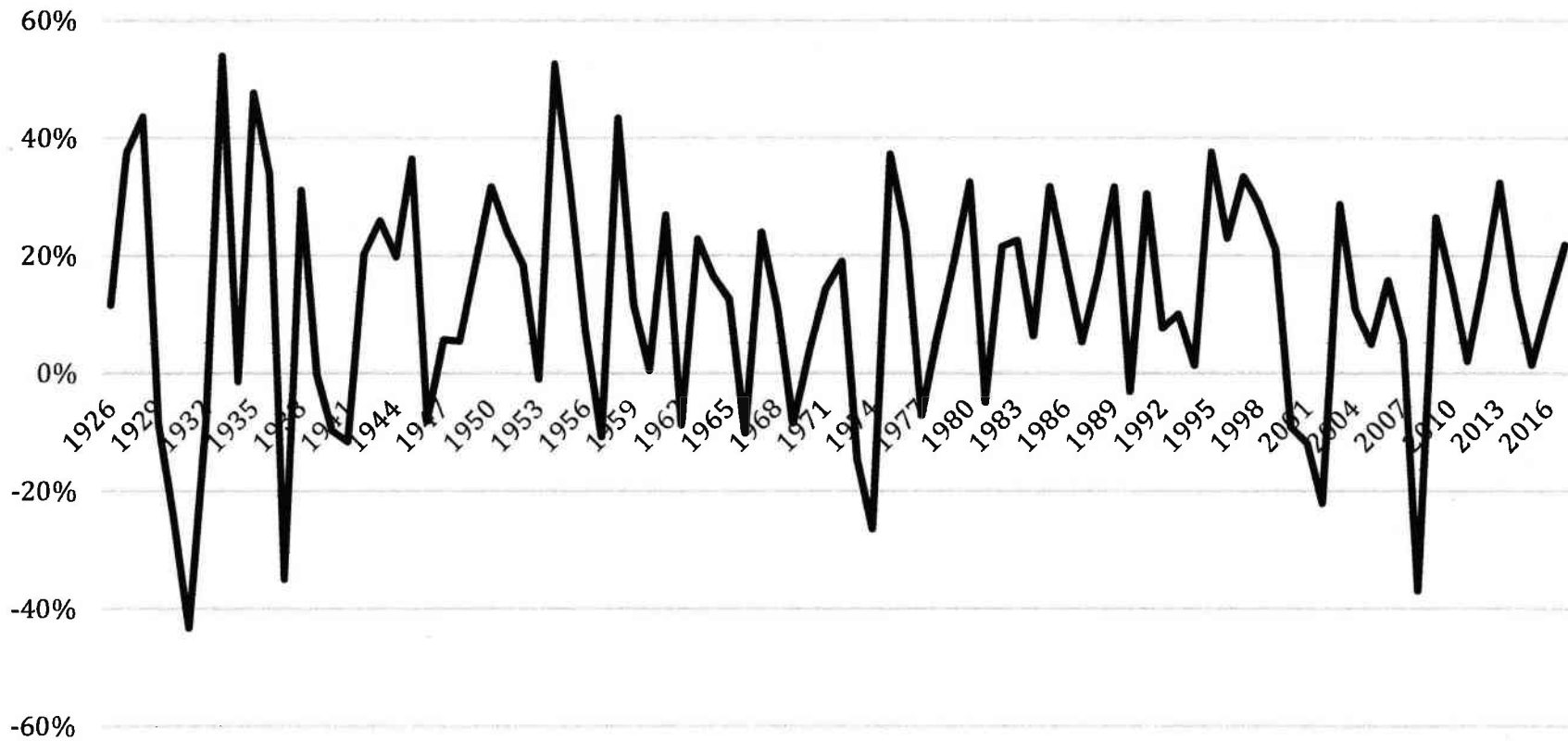
Re-lever to Indicated Book Value Capital Structure DCF

$$\begin{aligned}
 K_e &= K_u + \left(\left(K_u - i \right) \left(1 - t \right) \frac{D}{E} \right) + \left(K_u - d \right) \frac{P}{E} \\
 K_e &= 8.37\% + \left(\left(8.37\% - 5.25\% \right) \left(1 - 21\% \right) \frac{45.27\%}{54.61\%} \right) + \left(8.37\% - 7.26\% \right) \frac{0.12\%}{54.61\%} \\
 K_e &= 8.37\% + \left(3.13\% \right) \frac{82.89\%}{54.61\%} + \left(1.11\% \right) \frac{0.22\%}{54.61\%} \\
 K_e &= 8.37\% + \left(2.47\% \right) \frac{82.89\%}{54.61\%} + \left(0.00\% \right) \\
 K_e &= 8.37\% + \left(2.05\% \right) \frac{82.89\%}{54.61\%} + \left(0.00\% \right) \\
 K_e &= 10.42\%
 \end{aligned}$$

Where:

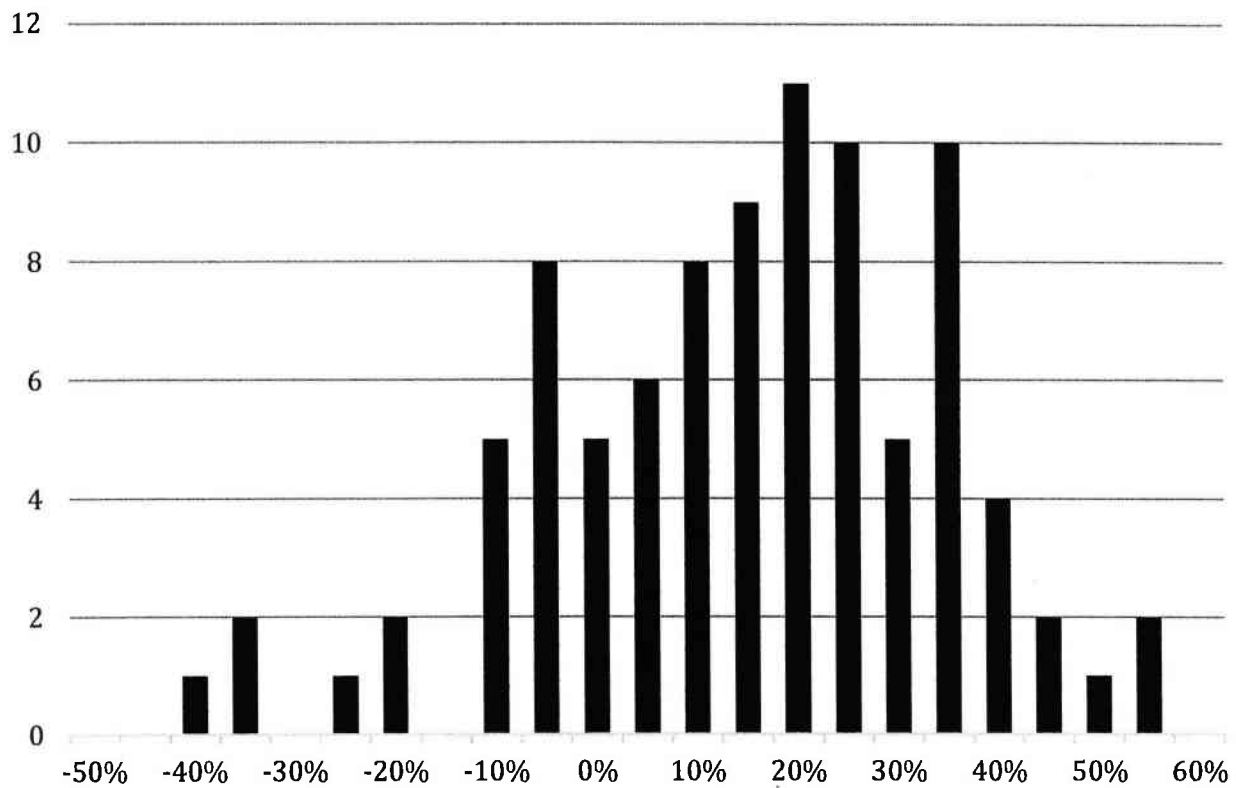
- Ku = Un-levered (i.e., 100% equity) cost of common equity
- Ke = Market determined cost of common equity
- i = Cost of debt
- t = Income tax rate
- D = Debt ratio
- E = Equity ratio
- d = Cost of preferred stock
- P = Preferred equity ratio

U.S. Large Company Stock Returns 1926-2017



Source of Information: Duff & Phelps, SBBI 2018 Yearbook: Stocks, Bonds, Bills, and Inflation 1926-2017, Appendix A

Frequency Distribution of Observed Market Returns 1926-2017



Source of Information: Duff & Phelps, SBBI 2018 Yearbook: Stocks, Bonds, Bills, and In
1926-2017, Appendix A

SUEZ Water Pennsylvania Inc.
Correction of Mr. Patel's Historical CAPM Analysis using an
MRP that uses Long-Term Arithmetic Mean Returns on Large Stocks
Less the Income Return on Long-Term Government Bonds and the use of the ECAPM

Line No.

1.	Rf = Risk-free rate (1)	5.00%
2.	Rm = Required Return on the market as a whole (1)	12.10%
3.	Be = Beta on individual equity security (2)	<u>0.74</u>
4.	Re = Required Return on individual equity security (CAPM) (3)	10.25%
5.	Re = Required Return on individual equity security (ECAPM) (4)	<u>10.72%</u>
6.	Average CAPM Result	<u><u>10.48%</u></u>

Notes:

(1) SBBI 2018 Yearbook at 6-17.

(2) From I&E Exhibit No. 2, Schedule 5.

(3) Line 1 + Line 3 (Line 2 - Line 1).

(4) Line 1 + (.75 * (Line 3 * (Line 2 - Line 1)))+(0.25 * (Line 2 - Line 1)).

SUEZ Water Pennsylvania Inc.
Correction of Mr. Patel's Projected CAPM Analysis using an
Appropriate Measure of Market Return, the Expected Yield on 30-Year Treasury Bonds,
and the use of the ECAPM

Line No.

1.	Rf = Risk-free rate (1)	3.76%
2.	Rm = Required Return on the market as a whole (2)	12.97%
3.	Be = Beta on individual equity security (3)	<u>0.74</u>
4.	Re = Required Return on individual equity security (CAPM) (4)	10.57%
5.	Re = Required Return on individual equity security (ECAPM) (5)	<u>11.17%</u>
6.	Average CAPM Result	<u><u>10.87%</u></u>

Notes:

(1) The risk-free rate is calculated by averaging the expected 30-year Treasury bond for the six quarters ending in the third quarter of 2018 and the years 2019-2023 and 2024-2028 as shown below:

Third Quarter 2018	3.30%
Fourth Quarter 2018	3.50%
First Quarter 2019	3.60%
Second Quarter 2019	3.70%
Third Quarter 2019	3.80%
2019-2023	4.10%
2024-2028	<u>4.30%</u>
Average	<u><u>3.76%</u></u>

(2) From I&E Exhibit No. 2, Schedule 7, page 1 of 3.

(3) From I&E Exhibit No. 2, Schedule 5.

(4) Line 1 + Line 3 (Line 2 - Line 1).

(5) Line 1 + (.75 * (Line 3 * (Line 2 - Line 1)))+(0.25 * (Line 2 - Line 1)).

Source of Information: Blue Chip Financial Forecasts, May 1, 2018 and December 1, 2017

2 ■ BLUE CHIP FINANCIAL FORECASTS ■ MAY 1, 2018

Consensus Forecasts Of U.S. Interest Rates And Key Assumptions¹

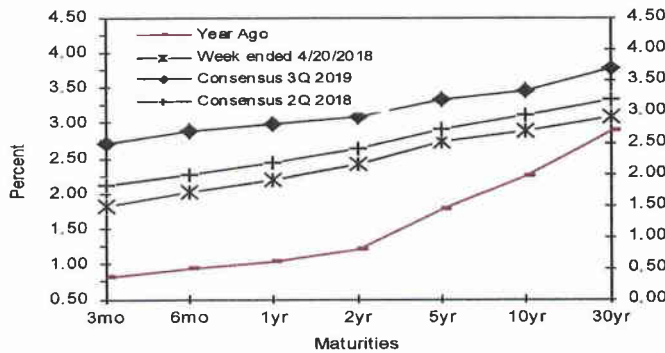
Interest Rates	History								Consensus Forecasts-Quarterly Avg.					
	Average For Week Ending				Average For Month				Latest Qtr	2Q 2018	3Q 2018	4Q 2018	1Q 2019	2Q 2019
	Apr. 20	Apr. 13	Apr. 6	Mar. 30	Mar	Feb	Jan	1Q 2018	2018	2018	2018	2019	2019	2019
Federal Funds Rate	1.69	1.69	1.68	1.68	1.49	1.42	1.41	1.44	1.7	2.0	2.2	2.4	2.6	2.8
Prime Rate	4.75	4.75	4.75	4.75	4.75	4.50	4.50	4.58	4.8	5.0	5.2	5.4	5.6	5.8
LIBOR, 3-mo.	2.36	2.34	2.32	2.30	2.16	1.84	1.73	1.91	2.3	2.4	2.6	2.8	2.9	3.1
Commercial Paper, 1-mo.	1.83	1.81	1.83	1.86	1.76	1.52	1.50	1.59	1.8	2.1	2.3	2.5	2.7	2.9
Treasury bill, 3-mo.	1.81	1.75	1.74	1.76	1.72	1.56	1.43	1.57	1.8	2.0	2.2	2.4	2.6	2.7
Treasury bill, 6-mo.	2.01	1.95	1.92	1.94	1.91	1.76	1.62	1.76	2.0	2.2	2.4	2.6	2.7	2.9
Treasury bill, 1 yr.	2.18	2.10	2.07	2.09	2.06	1.94	1.80	1.93	2.2	2.3	2.5	2.7	2.9	3.0
Treasury note, 2 yr.	2.42	2.33	2.28	2.29	2.27	2.16	2.02	2.15	2.4	2.6	2.7	2.9	3.0	3.1
Treasury note, 5 yr.	2.73	2.64	2.60	2.59	2.63	2.59	2.36	2.53	2.7	2.9	3.0	3.1	3.2	3.3
Treasury note, 10 yr.	2.88	2.80	2.78	2.79	2.85	2.84	2.56	2.75	2.9	3.1	3.2	3.3	3.4	3.5
Treasury note, 30 yr.	3.07	3.02	3.02	3.02	3.10	3.11	2.86	3.02	3.2	3.3	3.5	3.6	3.7	3.8
Corporate Aaa bond	3.98	3.93	3.95	3.95	3.98	3.91	3.68	3.86	4.0	4.2	4.4	4.6	4.7	4.8
Corporate Baa bond	4.60	4.55	4.58	4.58	4.59	4.47	4.24	4.43	4.8	5.0	5.2	5.3	5.4	5.5
State & Local bonds	3.63	3.62	3.62	3.62	3.61	3.57	3.42	3.53	3.8	3.9	4.0	4.1	4.3	4.4
Home mortgage rate	4.47	4.42	4.40	4.44	4.44	4.33	4.03	4.27	4.5	4.7	4.8	4.9	5.0	5.1

Key Assumptions	History								Consensus Forecasts-Quarterly					
	2Q 2016	3Q 2016	4Q 2016	1Q 2017	2Q 2017	3Q 2017	4Q 2017	1Q 2018	2Q 2018	3Q 2018	4Q 2018	1Q 2019	2Q 2019	3Q 2019
Major Currency Index	89.6	90.3	93.7	94.4	93.0	88.3	88.9	86.1	86.6	86.7	86.7	86.7	86.5	86.6
Real GDP	2.2	2.8	1.8	1.2	3.1	3.2	2.9	2.3	3.1	3.0	2.9	2.5	2.4	2.2
GDP Price Index	2.4	1.4	2.0	2.0	1.0	2.1	2.3	2.0	2.0	2.2	2.1	2.2	2.2	2.3
Consumer Price Index	2.7	1.8	2.7	3.0	0.1	2.1	3.3	3.5	1.9	2.3	2.1	2.2	2.2	2.3

Forecasts for interest rates and the Federal Reserve's Major Currency Index represent averages for the quarter. Forecasts for Real GDP, GDP Price Index and Consumer Price Index are seasonally-adjusted annual rates of change (saar). Individual panel members' forecasts are on pages 4 through 9. Historical data: Treasury rates from the Federal Reserve Board's H.15; AAA-AA and A-BBB corporate bond yields from Bank of America-Merrill Lynch and are 15+ years, yield to maturity; State and local bond yields from Bank of America-Merrill Lynch, A-rated, yield to maturity; Mortgage rates from Freddie Mac, 30-year, fixed; LIBOR quotes from Intercontinental Exchange. All interest rate data is sourced from Haver Analytics. Historical data for Fed's Major Currency Index is from FRSR H.10. Historical data for Real GDP and GDP Chained Price Index are from the Bureau of Economic Analysis (BEA). Consumer Price Index (CPI) history is from the Department of Labor's Bureau of Labor Statistics (BLS).

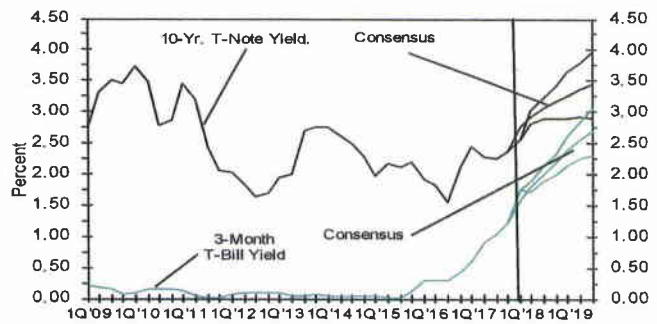
U.S. Treasury Yield Curve

Week ended April 20, 2018 and Year Ago vs. 2Q 2018 and 3Q 2019 Consensus Forecasts



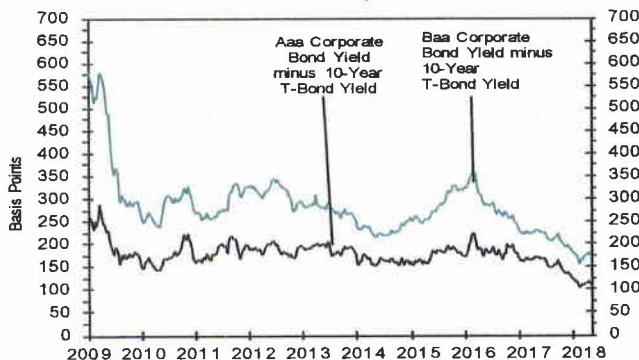
U.S. 3-Mo. T-Bills & 10-Yr. T-Note Yield

(Quarterly Average) Forecast



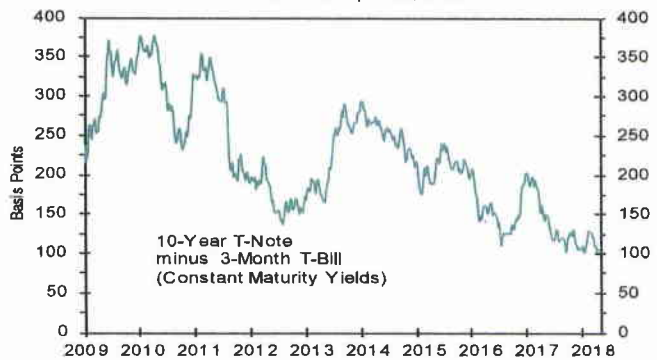
Corporate Bond Spreads

As of week ended April 20, 2018



U.S. Treasury Yield Curve

As of week April 20, 2018



Long-Range Survey:

The table below contains the results of our twice-annual long-range CONSENSUS survey. There are also Top 10 and Bottom 10 averages for each variable. Shown are consensus estimates for the years 2019 through 2023 and averages for the five-year periods 2019-2023 and 2024-2028. Apply these projections cautiously. Few if any economic, demographic and political forces can be evaluated accurately over such long time spans.

		Average For The Year					Five-Year Averages	
		2019	2020	2021	2022	2023	2019-2023	2024-2028
Interest Rates								
1. Federal Funds Rate	CONSENSUS	2.5	2.7	2.9	2.9	2.9	2.8	3.0
	Top 10 Average	2.9	3.2	3.4	3.4	3.5	3.3	3.5
	Bottom 10 Average	2.1	2.0	2.3	2.3	2.4	2.2	2.4
2. Prime Rate	CONSENSUS	5.5	5.8	5.9	5.9	5.9	5.8	5.9
	Top 10 Average	5.9	6.3	6.4	6.5	6.6	6.3	6.5
	Bottom 10 Average	5.0	5.1	5.2	5.2	5.2	5.1	5.3
3. LIBOR, 3-Mo.	CONSENSUS	2.8	3.1	3.2	3.1	3.2	3.1	3.2
	Top 10 Average	3.2	3.6	3.8	3.8	3.9	3.7	3.8
	Bottom 10 Average	2.4	2.6	2.6	2.5	2.6	2.5	2.6
4. Commercial Paper, 1-Mo.	CONSENSUS	2.6	2.9	3.0	3.0	3.1	2.9	3.1
	Top 10 Average	3.1	3.5	3.6	3.7	3.8	3.5	3.8
	Bottom 10 Average	2.2	2.5	2.6	2.5	2.5	2.5	2.6
5. Treasury Bill Yield, 3-Mo.	CONSENSUS	2.5	2.8	2.9	2.9	2.9	2.8	2.9
	Top 10 Average	2.9	3.3	3.4	3.4	3.5	3.3	3.5
	Bottom 10 Average	2.1	2.3	2.4	2.3	2.3	2.3	2.4
6. Treasury Bill Yield, 6-Mo.	CONSENSUS	2.6	2.9	3.0	3.0	3.0	2.9	3.1
	Top 10 Average	3.0	3.4	3.5	3.6	3.7	3.5	3.7
	Bottom 10 Average	2.2	2.4	2.5	2.4	2.4	2.4	2.5
7. Treasury Bill Yield, 1-Yr.	CONSENSUS	2.7	3.0	3.1	3.1	3.2	3.0	3.2
	Top 10 Average	3.2	3.6	3.7	3.7	3.8	3.6	3.9
	Bottom 10 Average	2.3	2.5	2.6	2.5	2.5	2.5	2.6
8. Treasury Note Yield, 2-Yr.	CONSENSUS	2.8	3.1	3.3	3.2	3.3	3.1	3.3
	Top 10 Average	3.3	3.8	3.8	3.8	3.9	3.7	4.0
	Bottom 10 Average	2.4	2.6	2.7	2.6	2.6	2.6	2.7
10. Treasury Note Yield, 5-Yr.	CONSENSUS	3.1	3.4	3.5	3.5	3.5	3.4	3.6
	Top 10 Average	3.6	3.9	4.1	4.1	4.1	3.9	4.3
	Bottom 10 Average	2.6	2.8	2.9	2.9	2.9	2.8	3.0
11. Treasury Note Yield, 10-Yr.	CONSENSUS	3.3	3.6	3.7	3.7	3.8	3.6	3.8
	Top 10 Average	3.9	4.2	4.3	4.3	4.3	4.2	4.5
	Bottom 10 Average	2.8	2.9	3.1	3.1	3.1	3.0	3.2
12. Treasury Bond Yield, 30-Yr.	CONSENSUS	3.8	4.1	4.2	4.2	4.2	4.1	4.3
	Top 10 Average	4.4	4.7	4.7	4.7	4.8	4.7	5.0
	Bottom 10 Average	3.3	3.5	3.6	3.5	3.6	3.5	3.7
13. Corporate Aaa Bond Yield	CONSENSUS	4.9	5.1	5.2	5.2	5.3	5.1	5.4
	Top 10 Average	5.5	5.9	5.9	6.0	6.0	5.9	6.2
	Bottom 10 Average	4.3	4.5	4.5	4.5	4.6	4.5	4.7
13. Corporate Baa Bond Yield	CONSENSUS	5.7	6.0	6.0	6.0	6.1	6.0	6.2
	Top 10 Average	6.4	6.8	6.8	6.9	6.9	6.8	7.0
	Bottom 10 Average	5.0	5.2	5.3	5.2	5.3	5.2	5.4
14. State & Local Bonds Yield	CONSENSUS	4.4	4.5	4.6	4.5	4.6	4.5	4.8
	Top 10 Average	5.0	5.2	5.2	5.3	5.3	5.2	5.5
	Bottom 10 Average	3.9	4.0	4.0	3.9	4.1	4.0	4.1
15. Home Mortgage Rate	CONSENSUS	5.0	5.2	5.3	5.3	5.4	5.2	5.5
	Top 10 Average	5.5	5.8	5.9	6.0	6.0	5.8	6.1
	Bottom 10 Average	4.5	4.7	4.7	4.6	4.7	4.6	4.9
A. FRB - Major Currency Index	CONSENSUS	90.4	90.0	89.9	89.9	90.0	90.0	90.4
	Top 10 Average	94.7	94.8	95.0	95.1	95.3	95.0	95.4
	Bottom 10 Average	86.9	85.8	85.4	85.5	85.6	85.8	86.1
		Year-Over-Year, % Change					Five-Year Averages	
		2019	2020	2021	2022	2023	2019-2023	2024-2028
B. Real GDP	CONSENSUS	2.2	1.9	2.0	2.0	2.0	2.0	2.0
	Top 10 Average	2.5	2.4	2.5	2.4	2.3	2.4	2.4
	Bottom 10 Average	1.8	1.4	1.7	1.6	1.7	1.6	1.7
C. GDP Chained Price Index	CONSENSUS	2.2	2.1	2.1	2.1	2.1	2.1	2.1
	Top 10 Average	2.5	2.3	2.3	2.3	2.3	2.3	2.3
	Bottom 10 Average	1.8	1.9	1.9	2.0	1.9	1.9	1.9
D. Consumer Price Index	CONSENSUS	2.3	2.3	2.3	2.2	2.2	2.3	2.2
	Top 10 Average	2.7	2.6	2.6	2.4	2.4	2.5	2.4
	Bottom 10 Average	1.9	1.9	2.0	2.0	2.0	2.0	2.0

SUEZ Water Pennsylvania Inc.
 Portfolio Ranks by Size and Risk Premiums over CAPM Results
 as Compiled by Duff and Phelps 2018 Guide to Cost of Capital

Portfolio Rank by Size	B-1		B-2		B-3		B-4		B-5		B-6		B-7		B-8	
	Average Mkt. Value (in \$millions)	Smoothed Premium over CAPM	Average Book Val. (in \$millions)	Smoothed Premium over CAPM	5 yr Average Net Inc. (in \$millions)	Smoothed Premium over CAPM	MVIC (in \$millions)	Smoothed Premium over CAPM	Total Assets (in \$millions)	Smoothed Premium over CAPM	5 yr Average EBITDA (in \$millions)	Smoothed Premium over CAPM	Sales (in \$millions)	Smoothed Premium over CAPM	Average Number of Employees	Smoothed Premium over CAPM
1	\$ 248,026	0.00%	\$ 70,131	1.27%	\$ 10,793	1.43%	\$ 282,824	0.11%	\$ 172,815	1.25%	\$ 23,040	1.52%	\$ 135,727	1.57%	358,832	0.81%
2	70,278	0.58%	21,291	1.81%	2,897	1.98%	88,370	0.87%	54,941	1.77%	6,061	2.02%	39,303	2.11%	112,125	1.56%
3	41,102	0.88%	14,015	1.98%	1,789	2.18%	52,759	1.21%	37,285	1.95%	4,484	2.21%	21,628	2.30%	66,351	1.90%
4	27,190	1.29%	9,416	2.17%	1,205	2.34%	37,885	1.43%	26,976	2.06%	3,334	2.33%	16,108	2.53%	48,103	2.10%
5	21,248	1.48%	6,957	2.31%	871	2.48%	28,258	1.82%	19,380	2.25%	2,388	2.47%	12,532	2.64%	38,021	2.26%
6	15,920	1.68%	5,378	2.42%	672	2.58%	21,908	1.78%	14,739	2.37%	1,757	2.60%	10,088	2.74%	28,323	2.44%
7	12,280	1.89%	4,470	2.50%	533	2.68%	17,124	1.95%	11,278	2.49%	1,383	2.70%	8,162	2.84%	22,444	2.59%
8	10,250	2.03%	3,543	2.61%	420	2.78%	13,951	2.08%	9,212	2.59%	1,155	2.77%	6,839	2.92%	18,793	2.71%
9	8,702	2.15%	2,987	2.68%	342	2.86%	11,240	2.23%	7,802	2.66%	939	2.88%	5,917	2.99%	15,684	2.83%
10	7,220	2.29%	2,537	2.76%	289	2.93%	8,481	2.34%	6,671	2.73%	780	2.84%	5,040	3.07%	13,534	2.92%
11	6,058	2.42%	2,173	2.83%	248	3.00%	6,198	2.43%	5,581	2.81%	674	3.00%	4,261	3.14%	12,220	2.99%
12	5,049	2.56%	1,910	2.88%	223	3.04%	7,034	2.53%	4,715	2.89%	588	3.06%	3,575	3.23%	10,657	3.02%
13	4,279	2.88%	1,633	2.95%	194	3.10%	5,783	2.66%	4,143	2.95%	495	3.13%	3,139	3.29%	9,355	3.16%
14	3,693	2.79%	1,377	3.03%	169	3.16%	5,070	2.75%	3,553	3.02%	428	3.19%	2,792	3.34%	8,106	3.25%
15	3,116	2.92%	1,219	3.08%	145	3.22%	4,356	2.85%	3,076	3.09%	375	3.25%	2,518	3.39%	7,021	3.34%
16	2,711	3.03%	1,078	3.14%	120	3.24%	3,729	2.85%	2,636	3.16%	330	3.30%	2,242	3.44%	6,100	3.43%
17	2,389	3.12%	934	3.20%	103	3.36%	3,109	3.07%	2,314	3.22%	293	3.35%	1,909	3.52%	5,213	3.53%
18	2,052	3.24%	803	3.27%	86	3.43%	2,680	3.17%	1,915	3.30%	252	3.41%	1,641	3.59%	4,389	3.65%
19	1,709	3.37%	674	3.35%	68	3.53%	2,257	3.28%	1,561	3.40%	207	3.49%	1,394	3.66%	3,521	3.79%
20	1,449	3.50%	545	3.44%	54	3.62%	1,898	3.40%	1,305	3.48%	162	3.59%	1,140	3.76%	2,852	3.92%
21	1,190	3.65%	454	3.53%	42	3.73%	1,547	3.53%	1,063	3.57%	126	3.70%	934	3.85%	2,245	4.08%
22	909	3.85%	373	3.61%	33	3.83%	1,212	3.68%	792	3.71%	98	3.80%	751	3.95%	1,771	4.23%
23	683	4.06%	298	3.71%	24	3.96%	882	3.80%	597	3.84%	75	3.92%	561	4.08%	1,278	4.44%
24	456	4.37%	212	3.87%	16	4.13%	599	4.15%	418	4.00%	50	4.09%	372	4.28%	832	4.72%
25	148	5.22%	77	4.32%	5	4.58%	198	4.88%	159	4.44%	16	4.57%	124	4.78%	265	5.45%

	B-1 Value	Portfolio Ranking	B-2 Value	Portfolio Ranking	B-3 Value	Portfolio Ranking	B-4 Value	Portfolio Ranking	B-5 Value	Portfolio Ranking	B-6 Value	Portfolio Ranking	B-7 Value	Portfolio Ranking	B-8 Value	Portfolio Ranking
Mr. Patef's Water Proxy Group	\$ 4,350	13	\$ 1,486	14	\$ 134	15-16	\$ 6,218	12-13	\$ 5,161	11-12	\$ 395	14-15	\$ 908	21	1,797	22
SUEZ Water Pennsylvania Inc.	\$ 584.55	23-24	\$ 187	24	\$ 8.44	25	\$ 584.55	24	\$ 291	24-25	\$ 24	25	\$ 45	25	96	25

Indicated Risk Premium
Relative to Mr. Patef's
Water Proxy Group

1.43%	0.84%	1.35%	1.56%	1.37%	1.35%	0.94%	1.22%
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Sources of Information:

Duff & Phelps 2018 Valuation Handbook Exhibit B-1 through B-8
 SNL Financial
 Company Form 10-K

SUEZ Water Pennsylvania Inc.
R-Squareds of Mr. Patel's Proxy Group

<u>Mr. Patel's Proxy Group</u>	<u>R- Squared</u>
American States Water Co.	0.1166
American Water Works	0.1034
Aqua America inc.	0.1399
California Water Service Group	0.1262
Middlesex Water	0.0990
York Water Company	<u>0.1021</u>
Average	<u><u>0.1145</u></u>

Source of Information: Value Line Proprietary Database, March 2018

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Comparable Earnings: New Life for an Old Precept

by
Frank J. Hanley
Pauline M. Ahern

Comparable Earnings: New Life for an Old Precept

Accelerating deregulation has greatly increased the investment risk of natural gas utilities. As a result, the authors believe it more appropriate than ever to employ the comparable earnings model. We believe our application of the model overcomes the greatest traditional objection to it — lack of comparability of the selected non-utility proxy firms. Our illustration focuses on a target gas pipeline company with a beta of 0.96 — almost equal to the market's beta of 1.00.

Introduction

The comparable earnings model used to determine a common equity cost rate is deeply rooted in the standard of "corresponding risk" enunciated in the landmark *Bluefield* and *Hope* decisions of the U.S. Supreme Court.¹ With such solid grounding in the foundations of rate of return regulation, comparable earnings should be accepted as a principal model, along with the currently popular market-based models, provided that its most common criticism, non-comparability of the proxy companies, is overcome.

Our comparable earnings model overcomes the non-comparability issue of the non-utility firms selected as a proxy for the target utility, in this example, a gas pipeline company. We should note that in the absence of common stock prices for the target utility (as with a wholly-owned subsidiary), it is appropriate to use the average of a proxy group of similar risk gas pipeline companies whose common stocks are actively traded. As we will demonstrate, our selection process results in a group of domestic, non-utility firms that is comparable in total risk, the sum of business and financial risk, which reflects both non-diversifiable systematic, or market, risk as well as diversifiable unsystematic, or firm-specific, risk.



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Embedded in the Landmark Decisions

As stated in *Bluefield* in 1922: "A public utility is entitled to such rates as will permit it to earn a return ... on investments in other business undertakings which are attended by corresponding risks and uncertainties ..."

In addition, the court stated in *Hope* in 1944: "By that standard the return to the equity owner should be commensurate with returns on investments in other enterprises having corresponding risks."

Thus, the "corresponding risk" pre-

cept of *Bluefield* and *Hope* predates the use of such market-based cost-of-equity models as the Discounted Cash Flow (DCF) and Capital Asset Pricing (CAPM), which were developed later and are currently popular in rate-base/rate-of-return regulation. Consequently, the comparable earnings model has a longer regulatory and judicial history. However, it has far greater relevance now than ever before in its history because significant deregulation has substantially increased natural gas utilities' investment risk to a level similar to that of non-utility firms. As a result, it is

Comparable Earnings *from page 4*

more important than ever to look to similar-risk non-utility firms for insight into common equity cost rate, especially in view of the deficiencies inherent in the currently popular market-based cost of common equity models, particularly the DCF model.

Despite the fact that the landmark decisions are still regarded as having set the standards for determining a fair rate of return, the comparable earnings model has experienced decreased usage by expert witnesses, as well as less regulatory acceptance over the years. We believe the decline in the popularity of the comparable earnings model, in large measure, is attributable to the difficulty of selecting non-utility proxy firms that regulators will accept as comparable to the target utility. Regulatory acceptance is difficult to gain when the selection process is arbitrary. Our application of the model is objective and consistent with fundamental financial tenets.

Principles of Comparable Earnings

Regulation is a substitute for the competition of the marketplace. Moreover, regulated public utilities compete in the capital markets with all firms, including unregulated non-utilities. The comparable earnings model is based upon the opportunity cost principle; i.e., that the true cost of an investment is the return that could have been earned on the next best available alternative investment of similar risk. Consequently, the comparable earnings model is consistent with regulatory and financial principles, as it is a surrogate for the competition of the marketplace, and investors seek the greatest available rate of return for bearing similar risk.

The selection of comparable firms is the most difficult step in applying the comparable earnings model, as noted by Phillips² as well as by Bonbright, Danielsen and Kamerschen.³ The selection of non-utility proxy firms should result in a sufficiently broad-based group in order to minimize the effect of company-specific aberrations. How-

ever, if the selection process is arbitrary, it likely would result in a proxy group that is too broad-based, such as the Standard & Poor's 500 Composite Index or the Value Line Industrial Composite. The use of such groups would require subjective adjustments to the comparable earnings results to reflect risk differences between the group(s) and the target utility, a gas pipeline company in this example.

Authors' Selection Criteria

We base the selection of comparable non-utility firms on market-based, objective, quantitative measures of risk resulting from market prices that subsume investors' assessments of all elements of risk. Thus, our approach is based upon the principle of risk and return; namely, that firms of comparable risk should be expected to earn comparable returns. It is also consistent with the "corresponding risk" standard established in *Bluefield* and *Hope*. We measure total investment risk as the sum of non-diversifiable systematic and diversifiable unsystematic risk. We use the unadjusted beta as a measure of systematic risk and the standard error of the estimate (residual standard error) as a measure of unsystematic risk. Both the unadjusted beta and the residual standard error are derived from a regression of the target utility's security returns relative to the market's returns, which takes the general form:

$$r_{it} = a_i + b_i r_{mt} + e_{it}$$

where:

- r_{it} = i th observation of the i th utility's rate of return
- r_{mt} = t th observation of the market's rate of return
- e_{it} = i th random error term
- a_i = constant least-squares regression coefficient
- b_i = least-squares regression slope coefficient, the unadjusted beta.

As shown by Francis,⁴ the total variance or risk of a firm's return, $\text{Var}(r_i)$, comes from two sources:

$$\text{Var}(r_i) = \text{total risk of } i\text{th asset}$$

$$\begin{aligned} &= \text{var}(a_i + b_i r_m + e) \\ &\quad \text{substituting } (a_i + b_i r_m + e) \\ &\quad \text{for } r_i \\ &= \text{var}(b_i r_m) + \text{var}(e) \text{ since} \\ &\quad \text{var}(a_i) = 0 \\ &= b_i^2 \text{var}(r_m) + \text{var}(e) \\ &\quad \text{since } \text{var}(b_i r_m) = b_i^2 \\ &\quad \text{var}(r_m) \\ &= \text{systematic} + \\ &\quad \text{unsystematic risk} \end{aligned}$$

Francis⁵ also notes: "The term $\sigma^2(r_i|r_m)$ is called the *residual variance around the regression line* in statistical terms or *unsystematic risk* in capital market theory language. $\sigma^2(r_i|r_m) = \dots = \text{var}(e)$. The residual variance is the squared standard error in regression language, a measure of unsystematic risk." Application of these criteria results in a group of non-utility firms whose average total investment risk is indeed comparable to that of the target gas pipeline.

As a measure of systematic risk, we use the Value Line unadjusted beta. Beta measures the extent to which market-wide or macro-economic events affect a firm's stock price. We use the unadjusted beta of the target utility as a starting point because it results from the regression of the target utility's security returns relative to the market's returns. Thus, the resulting standard deviation of beta relates to the unadjusted beta. We use the standard deviation of the unadjusted beta to determine the range around it as the selection criterion based on systematic risk.

We use the residual standard error of the regression as a measure of unsystematic risk. The residual standard error reflects the extent to which events specific to the firm's operations affect a firm's stock price. Thus, it is a measure of diversifiable, unsystematic, firm-specific risk.

An Illustration of Authors' Approach

Step One: We begin our approach by establishing the selection criteria as a range of both unadjusted beta and residual standard error of the target gas

continued on page 6

Comparable Earnings *from page 5*

pipeline company.

As shown in table 1, our target gas pipeline company has a Value Line unadjusted beta of 0.90, whose standard deviation is 0.1250. The selection criterion range of unadjusted beta is the unadjusted beta plus (+) and minus (-) three of its standard deviations. By using three standard deviations, 99.73 percent of the comparable unadjusted betas is captured.

Three standard deviations of the target utility's unadjusted beta equals 0.38 (0.1250 x 3 = 0.3750, rounded to 0.38). Consequently, the range of unadjusted betas to be used as a selection criteria is 0.52 - 1.28 (0.52 = 0.90 - 0.38) and (1.28 = 0.90 + 0.38).

Likewise, the selection criterion range of residual standard error equals the residual standard error plus (+) and

minus (-) three of its standard deviations. The standard deviation of the residual standard error is defined as: $\sigma/\sqrt{2N}$.

As also shown in table 1, the target gas pipeline company has a residual standard error of 3.7867. According to the above formula, the standard deviation of the residual standard error would be 0.1664 (0.1664 = 3.7867 / $\sqrt{2(259)}$) = 3.7867 / 22.7596, where 259 = N, the number of weekly price change observations over a period of five years). Three standard deviations of the target utility's residual standard error would be 0.4992 (0.1664 x 3 = .4992). Consequently, the range of residual standard errors to be used as a selection criterion is 3.2875 - 4.2859 (3.2875 = 3.7867 - 0.4992) and (4.2859 = 3.7867 + 0.4992).

Step Two: The step one criteria are applied to Value Line's data base of nearly 4,000 firms for which Value Line derives unadjusted betas and residual standard errors on a weekly basis. All firms with unadjusted betas and residual standard errors within the criteria ranges are then selected.

Step Three: In the regulatory ratemaking environment, authorized common equity return rates are applied to a book-value rate base. Thus, the earnings rates on book common equity, or net worth, of competitive, non-utility firms are highly relevant provided those firms are indeed comparable in total risk to the target gas pipeline. The use of the return rates of other utilities has no relevance because their allowed, and hence subsequently achieved, earnings rates are dependent upon the regulatory

table 1

Summary of the Comparable Earnings Analysis for the Proxy Group of 248 Non-Utility Companies Comparable in Total Risk to the Target Gas Pipeline Company¹

	1	2	3	4	5	6	7	8
	adj. beta	unadj. beta	residual standard error	rate of return on net worth				
				3-year average ²	4-year average ²	5-year average ²	5-year projected ³	
average for the proxy group of 248 non-utility companies comparable in total risk to the target gas pipeline company	0.97	0.92	3.7705					
target gas pipeline company	0.96	0.90 ⁴	3.7867					
median				11.7%	12.0%	12.6%	15.5%	
average of the median historical returns					12.1%			
conclusion ⁵								13.8%

¹ The criteria for selection of the non-utility group was that the non-utility companies be domestic and included in Value Line Investment Survey. The non-utility group was selected based on an unadjusted beta range of 0.52 to 1.28 and a residual standard error range of 3.2875 to 4.2859.

² Ending 1992.

³ 1996-1998/1997-1999.

⁴ The average standard deviation of the target gas pipeline company's unadjusted beta is 0.1250.

⁵ Equal weight given to both the average of the 3-, 4- and 5-year historical medians (12.1%) and 5-year projected median rate of return on net worth (15.5%). Thus, 13.8% = (12.1% + 15.5% / 2).

Source: Value Line Inc., March 15, 1994
 Value Line Investment Survey

Comparable Earnings *from page 6*

process. Consequently, we believe all utilities must be eliminated to avoid circularity. Moreover, we believe non-domestic firms must be eliminated because their reporting methods differ significantly from U.S. firms.

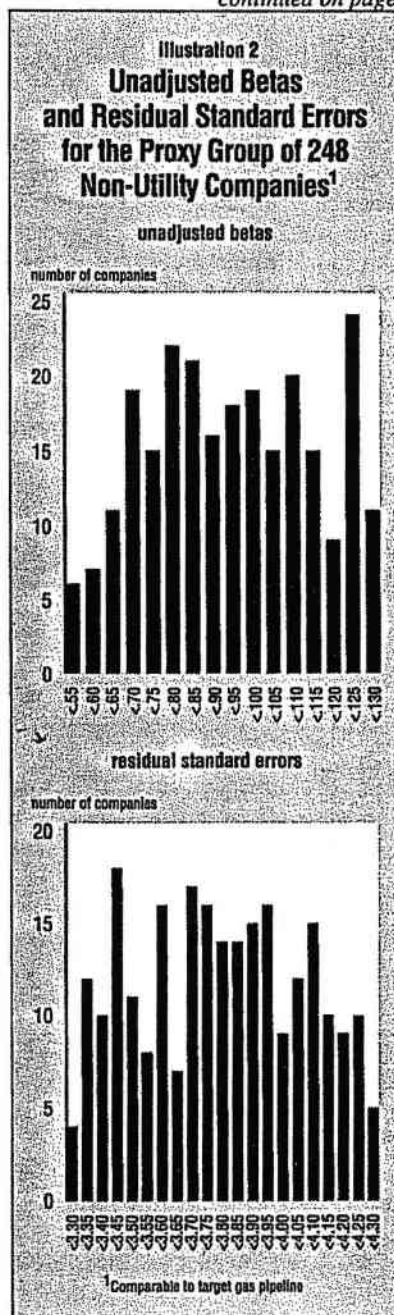
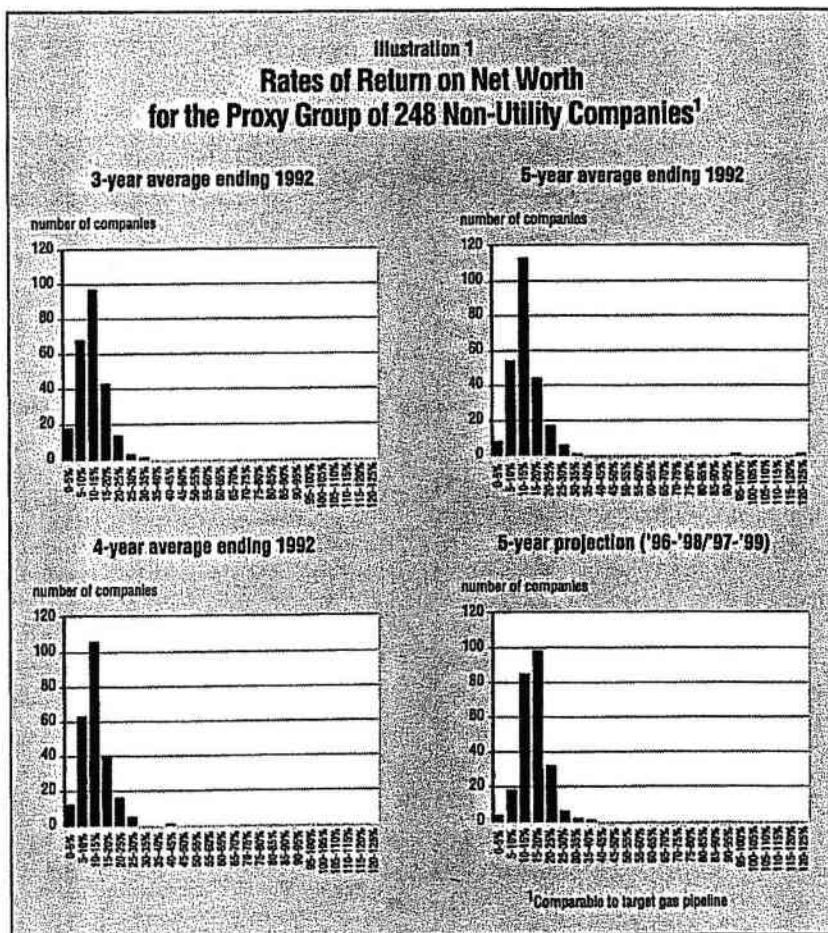
Step Four: We then eliminated those firms for which Value Line does not publish a "Ratings & Report" in *Value Line Investment Survey* so that the historical and projected returns on net worth⁶ are from a consistent source. We use historical returns on net worth for the most recent five years, as well as those projected three to five years into the future. We believe it is logical to evaluate both historical and projected return rates because it is reasonable to assume that investors avail themselves of both when they are available from widely disseminated information ser-

vices, such as Value Line Inc. The use of Value Line's return rates on net worth understates the common equity return rates for two reasons. First, preferred stock is included in net worth. Second, the net worth return rates are as of the end of each period. Thus, the use of average common equity return rates would yield higher results.

Step Five: Median returns based on the historical average three, four and five years ending 1992 and projected 1996-1998 or 1997-1999 rates of return on net worth are then determined as shown in columns 4 through 7 of table 1. The median is used due to the wide variations and skewness in rates of return on net worth for the non-utility firms as evidenced by the frequency distributions of those returns as shown in illustration 1.

However, we show the average unadjusted beta, 0.92, and residual standard error, 3.7705, for the proxy group in columns 2 and 3 of table 1 because their frequency distributions are not significantly skewed, as shown in illustration 2.

Step Six: Our conclusion of a com-
continued on page 8



Comparable Earnings *from page 7*

comparable earnings cost rate is based upon the mid-point of the average of the median three-, four- and five-year historical rates of return on net worth of 12.1 percent as shown in column 5 and the median projected 1996-1998/1997-1999 rate of return on net worth of 15.5 percent as shown in column 7 of table 1. As shown in column 8, it is 13.8 percent.

Summary

Our comparable earnings approach demonstrates that it is possible to select a proxy group of non-utility firms that is comparable in total risk to a target utility. In our example, the 13.8 percent comparable earnings cost rate is very conservative as it is an expected achieved rate on book common equity (a regulatory allowed rate should be

greater) and because it is based on end-of-period net worth. A similar rate on average net worth would be about 20 to 40 basis points higher (i.e., 14.0 to 14.2 percent) and still understate the appropriate regulatory allowed rate of return on book common equity.

Our selection criteria are based upon measures of systematic and unsystematic risk, specifically unadjusted beta and residual standard error. They provide the basis for the objective selection of comparable non-utility firms. Our selection criteria rely on changes in market prices over approximately five years. We compare the aggregate total risk, or the sum of systematic and unsystematic risk, which reflects investors' aggregate assessment of both business and financial risk. Thus, no adjustments are necessary to the proxy group results to

compensate for the differences in business risk and financial risk, such as accounting practices and debt/equity ratios. Moreover, it is inappropriate to attempt a comparison of the target utility with any individual firm, or subset of firms, in the proxy group because only the average firm of the group is relevant.

Because the comparable earnings model is firmly anchored in the "corresponding risk" precept established in the landmark court decisions, it is worthy of consideration as a principal model for use in estimating the cost rate of common equity capital of a regulated utility. Our approach to the comparable earnings model produces a proxy group that is indeed comparable in total risk because the selection process is objective and quantitative. It therefore overcomes criticism linked to arbitrary selection processes.

All cost-of-common-equity models, including the DCF and CAPM, are fraught with deficiencies, usually stemming from the many necessary but unrealistic assumptions that underlie them. The effects of the deficiencies of individual models can be mitigated by using more than one model when estimating a utility's common equity cost rate. Therefore, when the non-comparable issue is overcome, the comparable earnings model deserves to receive the same consideration as a primary model, as do the currently popular market-based models. ■

Report Lists Pipeline, Storage Projects

More than \$9 billion worth of projects to expand the nation's natural gas pipeline network are in various stages of development, according to an A.G.A. report. These projects involve nearly 8,000 miles of new pipelines and capacity additions to existing lines and represent 15.3 billion cubic feet (Bcf) per day of new pipeline capacity.

During 1993 and early 1994, construction on 3,100 miles of pipeline was completed or under way, at a cost of nearly \$4 billion, says A.G.A. These projects are adding 5.4 Bcf in daily delivery capacity nationwide.

Among the projects completed in 1993 were Pacific Gas Transmission Co.'s 805 miles of looping that allows increased deliveries of Canadian gas to the West Coast; Northwest Pipeline Corp.'s addition of 433 million cubic feet of daily capacity for customers in the Pacific Northwest and Rocky Mountain areas; and the 156-mile Empire State Pipeline in New York.

In addition, major construction projects were started on the systems of Texas Eastern Transmission Corp. and Algonquin Gas Transmission Co. — both subsidiaries of Panhandle Eastern Corp. — and along Florida Gas Transmission Co.'s pipeline.

The report goes on to discuss another \$5 billion in proposed projects, which, if completed, will add nearly 5,000 miles of pipeline and 9.8 Bcf per day in capacity, much of it serving Florida and West Coast markets.

A.G.A. also identifies 47 storage projects and says that if all of them are built, existing storage capacity will increase by more than 500 Bcf, or 15 percent.

For a copy of *New Pipeline Construction: Status Report 1993-94* (#F00103), call A.G.A. at (703) 841-8490. Price per copy is \$6 for employees of member companies and associates and \$12 for other customers.

¹ *Bluefield Water Works Improvement Co. v. Public Service Commission*, 262 U.S. 679 (1922) and *Federal Power Commission v. Hope Natural Gas Co.*, 320 U.S. 519 (1944).

² Charles F. Phillips Jr., *The Regulation of Public Utilities: Theory and Practice*, Public Utilities Reports Inc., 1988, p. 379.

³ James C. Bonbright, Albert L. Danielsen and David R. Kamerschen, *Principles of Public Utilities Rates*, 2nd edition, Public Utilities Reports Inc. 1988, p. 329.

⁴ Jack Clark Francis, *Investments: Analysis and Management*, 3rd edition, McGraw-Hill Book Co., 1980, p. 363.

⁵ *Id.*, p. 548.

⁶ Returns on net worth must be used when relying on Value Line data because returns on book common equity for non-utility firms are not available from Value Line.



Investments:
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Beta Measurements The beta coefficient is an *index of systematic risk*. Beta coefficients may be used for ranking the systematic risk of different assets. If the beta is larger than 1, $b > 1.0$, then the asset is more volatile than the market and is called an **aggressive asset**. If the beta is less than 1, $b < 1.0$, the asset is a **defensive asset**; its price fluctuations are less volatile than the market's. Figure 10-1 illustrates the characteristic lines for three different assets that have low, medium, and high levels of beta (or undiversifiable risk).

Figure 10-2 shows that IBM is a stock with an average amount of systematic risk. IBM's beta of 1.02 indicates that its return tends to increase 2 percent more than the return on the market average when the market is rising. When the market falls, IBM's return tends to fall 2 percent more than the market's. The characteristic line for IBM has an above average correlation coefficient of $\rho = .7495$, indicating that the returns on this security follow its particular characteristic line slightly more closely than those of the average stock.

Partitioning Risk

Total risk can be measured by the variance of returns, denoted $\text{Var}(r)$. This measure of *total risk is partitioned into its systematic and unsystematic components in Equation (10-8).*⁷

$$\begin{aligned} \text{Var}(r_i) &= \text{total risk of } i\text{th asset} \\ &= \text{Var}(a_i + b_i r_{m,t} + e_{i,t}) \\ &\quad \text{by substituting } (a_i + b_i r_{m,t} + e_{i,t}) \text{ for } r_{i,t} \\ &= 0 + \text{Var}(b_i r_{m,t}) + \text{Var}(e_{i,t}) \\ &\quad \text{since } \text{Var}(a_i) = 0 \end{aligned} \tag{10-8}$$

$$\begin{aligned} \text{Var}(r_i) &= b_i^2 \text{Var}(r_m) + \text{Var}(e) \quad \text{since } \text{Var}(b_i r_m) = b_i^2 \text{Var}(r_m) \\ &= \text{systematic} + \text{unsystematic risk} \end{aligned} \tag{10-8a}$$

$$.01389 = .00780 + .00609 \quad \text{for IBM}$$

The unsystematic risk measure $\text{Var}(e)$ is called in regression language the *residual variance* or, synonymously, the *standard error squared*.

Undiversifiable Proportion The percentage of total risk that is systematic can be measured by the coefficient of determination ρ^2 (that is, the characteristic line's squared correlation coefficient).

⁷In this context, *partition* is a technical statistical term that means to divide the total variance into *mutually exclusive* and *exhaustive* pieces. This partition is only possible if the returns from the market are statistically independent from the residual error terms that occur simultaneously, $\text{Cov}(r_{m,t}, e_{i,t}) = 0$. The mathematics of regression analysis will orthogonalize the residuals and thus ensure that the needed statistical independence exists.

$$\frac{\text{Systematic risk}}{\text{Total risk}} = \frac{b_i^2 \text{Var}(r_m)}{\text{Var}(r_i)} = \rho^2 \quad (10-9)$$

$$\frac{.007802}{.01389} = \frac{(1.021)^2 (.00749)}{.00749} = .5617 \times 100 = 56.17\% \quad \text{for IBM}$$

Diversifiable Proportion The percentage of unsystematic risk equals $(1.0 - \rho^2)$.

$$\frac{\text{Unsystematic risk}}{\text{Total risk}} = \frac{\text{Var}(e)}{\text{Var}(r_i)} = (1.0 - \rho^2)$$

$$\frac{.00609}{.01389} = (1.0 - .5617) = .438 \times 100 \quad (10-10)$$

$$= 43.8\% \text{ unsystematic} \quad \text{for IBM}$$

Studies of the characteristic lines of hundreds of stocks listed on the NYSE indicate that the average correlation coefficient is approximately $\rho = .5$.⁸ This means that about $\rho^2 = 25$ percent of the total variability of return in most NYSE securities is explained by movements in the market.

	NYSE average	IBM
Systematic risk: ρ^2	.25	.5617
Unsystematic risk: $(1.0 - \rho^2)$.75	.4383
Total risk: 100%	1.00	1.0000

As explained above, systematic changes are common to all stocks and are therefore undiversifiable.

A primary use of the characteristic line (or *market model*, or the *single-index model*, as it is also called) is to assess the risk characteristics of one asset.⁹ The statistics in Table 10-2, for instance, indicate that IBM's common stock is slightly more risky than the average common stock in terms of total risk and

⁸The average ρ was found to be about .5, as reported in Marshall Blume, "On the Assessment of Risk," *Journal of Finance*, March 1971, p. 4. For similar estimates, see J. C. Francis, "Statistical Analysis of Risk Surrogates for NYSE Stocks," *Journal of Financial and Quantitative Analysis*, Dec. 1979.

⁹Professor Jensen reformulated the characteristic line in a risk-premium form. See M. C. Jensen, "The Performance of Mutual Funds in the Period 1945 through 1964," *Journal of Finance*, May 1968, pp. 389-416. See also M. C. Jensen, "Risk, the Pricing of Capital Assets, and the Evaluation of Investment Portfolios," *Journal of Business*, vol. XLII, 1969. Jensen interprets the alpha intercept term of the characteristic line, as he formulates it, as an investment performance measure. It has been suggested that Jensen's performance measure is biased. See Keith V. Smith and Dennis A. Tito, "Risk-Return Measures of Ex-Post Portfolio Performance," *Journal of Financial and Quantitative Analysis*, Dec. 1969, vol. IV, no. 4, p. 466.

systematic risk.¹⁰ New risk measurements must be made periodically, however, because the risk and return of an asset may change with the passage of time.¹¹

10-3

CAPITAL ASSET PRICING MODEL (CAPM)

An old axiom states "there is no such thing as a free lunch." This means that you cannot expect to get something for nothing—a rule that certainly applies to investment returns. Investors who want to earn high average rates of return must take high risks and endure the associated loss of sleep, the possibility of ulcers, and the chance of bankruptcy. The question to which we now turn is: Should investors worry about total risk, undiversifiable risk, diversifiable risk, or all three?

In Chapter 1 it was suggested that *investors should seek investments that have the maximum expected return in their risk class*. Their happiness from investing is presumed to be derived as indicated in the expected utility $E(U)$ function below.

$$E(U) = f[E(r), \sigma]$$

The investment preferences of wealth-seeking risk-averse investors represented by the function above cause them to maximize their expected utility (or, equivalently, happiness) by (1) maximizing their expected return in any given risk class, $\partial E(U)/\partial E(r) > 0$, or, conversely, (2) minimizing their total risk at any given rate of expected return, $\partial E(U)/\partial \sigma < 0$. However, in selecting individual assets, investors will not be particularly concerned with the asset's total risk σ . Figure 9-1 showed that the unsystematic portion of total risk can be easily diversified by holding a portfolio of different securities. But, systematic risk affects all stocks in the market because it is undiversifiable. Portfolio theory therefore suggests that only the undiversifiable (or systematic) risk is worth avoiding.¹²

¹⁰Statements about the relative degree of total risk are made in the context of a long-run horizon—that is, over at least one *complete business cycle*. Obviously, an accurate short-run forecast which says that some particular company will go bankrupt next quarter makes it more risky than IBM, although IBM may have had more historical variability of return.

¹¹Empirical studies documenting the intertemporal instability of betas have been published. Marshall Blume, "Betas and Their Regression Tendencies," *Journal of Finance*, June 1975, pp. 785–795. See also J. C. Francis, "Statistical Analysis of Risk Coefficients for NYSE Stocks," *Journal of Financial and Quantitative Analysis*, Dec. 1979, vol. XIV, no. 5, pp. 981–997. An appendix at the end of this chapter reviews some evidence about shifting betas, standard deviations, and correlations.

¹²Both the systematic and unsystematic portions of total risk must be considered by *undiversified investors*. Entrepreneurs who have their entire net worth invested in one business, for example, can be bankrupted by a piece of bad luck that could be easily averaged away to zero in a diversified portfolio. Poorly diversified investors should not treat diversifiable risk lightly. Only well-diversified investors can afford to ignore diversifiable risk.

**CONSTANT GROWTH DISCOUNTED CASH FLOW (DCF) INDICATED COST OF EQUITY
WATER PROXY GROUP**

		BASED ON VALUE LINE		BASED ON ACTUAL RETURNS AND ANALYSTS CONSENSUS ESTIMATE	
		BASED ON AVERAGE MARKET PRICE FOR Year Ending 6/30/17	BASED UPON MARKET PRICE AS OF 6/29/2013	BASED ON AVERAGE MARKET PRICE FOR Year Ending 6/30/17	BASED UPON MARKET PRICE AS OF 6/29/2013
1 Dividend Yield On Market Price	[B]	2.02%	2.02%	2.02%	2.02%
2 Retention Ratio:					
a) Market-to-book	[B]	3.30	3.20	3.30	3.20
b) Div. Yld on Book	[C]	6.65%	6.47%	6.65%	6.47%
c) Return on Equity	[A]	12.00%	12.00%	11.50%	11.50%
d) Retention Rate	[D]	44.82%	46.06%	42.21%	43.72%
3 Reinvestment Growth	[E]	5.35%	5.53%	4.85%	5.03%
4 New Financing Growth	[F]	2.30%	2.20%	2.30%	2.20%
5 Total Estimate of Investor Anticipated Growth	[G]	7.65%	7.73%	7.15%	7.23%
6 Increment to Dividend Yield for Growth to Next Year	[H]	0.08%	0.08%	0.07%	0.07%
7 Indicated Cost of Equity	[I]	9.75%	9.83%	9.24%	9.32%

Some of the Considerations for determining Future Expected Return on Equity:

	Median	Mean	Source:
[A] Value Line Expectation	12.50%	12.50%	SCHEDULE ALR 3, Page 2
Return on Equity to Achieve <u>Lock's</u> Growth	11.76%	11.31%	SCHEDULE ALR 3, Page 3
Earned Return on Equity in 2017	10.66%	11.23%	SCHEDULE ALR 3, Page 2
Earned Return on Equity in 2016	10.57%	10.51%	SCHEDULE ALR 3, Page 2
Earned Return on Equity in 2015	10.71%	10.39%	SCHEDULE ALR 3, Page 2
[B] SCHEDULE ALR 3, Page 1			
[C] Line 1 x Line 2a			
[D] 1- Line 2b/Line 2c			
[E] Line 2c x Line 2d			
[F] $S \times V$ (S = the rate of continuous new stock financing, V = rate of return on common equity investment)			
[G] $[M/B \times (Ext. Fin Rate + 1)] / (M/B + Ext. Fin. Rate - 1)$	Ext. Fin. rate used =	1.00%	[J]
[H] Line 3 + Line 4			
[I] Line 1 x one-half of line 5			
[J] Line 1 + Line 5 + Line 6			
[K] SCHEDULE ALR 5			

VERIFICATION

I, PAUL R. HERBERT, hereby state that the facts set forth above are true and correct to the best of my knowledge, information and belief and that I expect to be able to prove the same at a hearing held in this matter. I understand that the statements herein are made subject to the penalties of 18 Pa. C.S. § 4904 (relating to unsworn falsification to authorities).

Date: October 10, 2018

Paul R Herbert

SWPA STATEMENT NO. 6
DOCKET NO. R-2018-3000834

BEFORE THE
PENNSYLVANIA PUBLIC UTILITY COMMISSION

DIRECT TESTIMONY OF
PAUL R. HERBERT

ON BEHALF OF SUEZ WATER PENNSYLVANIA INC.

CONCERNING

COST OF SERVICE ALLOCATION

AND

CUSTOMER RATE DESIGN

APRIL 27, 2018

BEFORE THE PENNSYLVANIA PUBLIC UTILITY COMMISSION

RE: SUEZ WATER PENNSYLVANIA INC.
DOCKET R-2018-3000834
DIRECT TESTIMONY OF PAUL R. HERBERT

Line
No.

- 1 **Q. Please state your name and address.**
- 2 A. My name is Paul R. Herbert. My business address is 207 Senate Avenue,
3 Camp Hill, Pennsylvania.
- 4 **Q. By whom are you employed?**
- 5 A. I am employed by Gannett Fleming Valuation and Rate Consultants, LLC.
- 6 **Q. Please describe your position with Gannett Fleming Valuation and Rate**
7 **Consultants, LLC, and briefly state your general duties and**
8 **responsibilities.**
- 9 A. I am President. My duties and responsibilities include the preparation of
10 accounting and financial data for revenue requirement and cash working
11 capital claims, the allocation of cost of service to customer classifications,
12 and the design of customer rates in support of public utility rate filings.
- 13 **Q. Have you presented testimony in rate proceedings before a regulatory**
14 **agency?**
- 15 A. Yes. I have testified before the Pennsylvania Public Utility Commission, the
16 New Jersey Board of Public Utilities, the Public Utilities Commission of Ohio,
17 the Public Service Commission of West Virginia, the Kentucky Public
18 Service Commission, the Iowa State Utilities Board, the Virginia State
19 Corporation Commission, the Missouri Public Service Commission, the New
20 Mexico Public Regulation Commission, the Public Utilities Commission of the

1 State of California, the Illinois Commerce Commission, the Delaware Public
2 Service Commission, the Arizona Corporation Commission, the Connecticut
3 Department of Public Utility Control, the Idaho Public Utilities Commission,
4 the Hawaii Public Utilities Commission, the New York State Public Service
5 Commission, and the Tennessee Regulatory Authority, concerning revenue
6 requirements, cost of service allocation, rate design and cash working capital
7 claims. A list of cases in which I have testified is attached to my testimony.

8 **Q. What is your educational background?**

9 A. I have a Bachelor of Science Degree in Finance from the Pennsylvania State
10 University, University Park, Pennsylvania.

11 **Q. Would you please describe your professional affiliations?**

12 A. I am a member of the American Water Works Association and served as a
13 member of the Management Committee for the Pennsylvania Section. I am
14 also a member of the Pennsylvania Municipal Authorities Association. In
15 1998, I became a member of the National Association of Water Companies
16 as well as a member of its Rates and Revenue Committee.

17 **Q. Briefly describe your work experience.**

18 A. I joined the Valuation Division of Gannett Fleming Corrdry and Carpenter,
19 Inc., predecessor to Gannett Fleming, Inc., in September 1977, as a Junior
20 Rate Analyst. Since then, I advanced through several positions and was
21 assigned the position of Manager of Rate Studies on July 1, 1990. On June
22 1, 1994, I was promoted to Vice President and Senior Vice President in
23 November 2003. On July 1, 2007, I was promoted to my current position as
24 President.

1 relative cost responsibilities of each class of customers. The allocated cost
2 of service is one of several criteria appropriate for consideration in designing
3 customer rates to produce the required revenues.

4 **Q. Have you prepared an exhibit presenting the results of your studies?**

5 A. Yes. The results of my allocation of the pro forma cost of service as of
6 December 31, 2019, and proposed customer rates to produce the pro forma
7 revenue requirement as of that date are presented in SWPA Exhibit No.
8 PRH-1.

9 **Q. Please describe the method of cost allocation that was used in your**
10 **study.**

11 A. The base-extra capacity method, as described in the 2017 and prior editions
12 of the Water Rates Manual published by the American Water Works
13 Association (AWWA), was used to allocate the pro forma costs. It is a
14 recognized method for allocating the cost of providing water service to
15 customer classifications in proportion to each classification's use of the
16 commodity, facilities, and services. It is generally accepted as a sound
17 method for allocating the cost of water service and has been accepted by
18 this Commission for that purpose. It is the method that was used by the
19 Company and accepted by this Commission in the Company's prior rate
20 cases.

21 **Q. Is the method described in SWPA Exhibit No. PRH-1?**

22 A. Yes. It is described on pages I-2 to I-4 of the exhibit.

23 **Q. Please describe the procedure followed in the cost allocation study.**

1 A. Each identified classification of cost in the pro forma cost of service was
2 allocated to the customer classifications through the use of appropriate
3 allocation factors. This allocation is presented in Schedule D on pages II-5
4 through II-9 of SWPA Exhibit No. PRH-1. The items of cost, which include
5 operation and maintenance expenses, depreciation expense, taxes and
6 income available for return, are identified in column 1 of Schedule D. The
7 cost of each item, shown in column 3, is allocated to the several customer
8 classifications based on allocation factors referenced in column 2. The
9 development of the allocation factors is presented in Schedule E of the
10 exhibit.

11 I will use some of the larger cost items to illustrate the principles and
12 considerations used in the cost allocation methodology. Purchased water,
13 purchased electric power and treatment chemicals are examples of costs
14 that tend to vary with the amount of water consumed and are thus
15 considered base costs. They are allocated to the several customer
16 classifications in direct proportion to the average daily consumption of those
17 classifications through the use of Factor 1. The development of Factor 1 is
18 shown in Schedule E on page II-10 of SWPA Exhibit No. PRH-1.

19 Other source of supply, water treatment and transmission costs are
20 associated with meeting usage requirements in excess of the average,
21 generally to meet maximum day requirements. Costs of this nature were
22 allocated to customer classifications partially as base costs, proportional to
23 average daily consumption, partially as maximum day extra capacity costs,
24 in proportion to maximum day extra capacity, and, in the case of certain

1 pumping stations and transmission mains, partially as fire protection costs,
2 through the use of Factors 2 and 3. The development of the allocation
3 factors, referenced as Factors 2 and 3, is shown in Schedule E, on pages II-
4 10 through II-13, of SWPA Exhibit No. PRH-1.

5 Costs associated with storage facilities and the capital costs of
6 distribution mains were allocated partly on the basis of average consumption
7 and partly on the basis of maximum hour extra demand, including the
8 demand for fire protection service, because these facilities are designed to
9 meet maximum hour and fire demand requirements. The Large Industrial
10 class was excluded from Factor 4 since this class is served from
11 transmission mains only. The development of the factors, referenced as
12 Factors 4 and 5, used for these allocations is shown in Schedule E, on
13 pages II-14 through II-17, of SWPA Exhibit No. PRH-1. Fire demand costs
14 were allocated to public and private fire protection service and general
15 service in proportion to the relative potential demands on the system by
16 hydrants, fire services, and commercial service lines sized to provide both
17 fire protection and general service, as presented on Schedule G, page II-32
18 of SWPA Exhibit No. PRH-1.

19 Costs associated with the operation and maintenance of mains were
20 allocated on combined bases of maximum day and maximum hour extra
21 capacity because these facilities serve both functions. The relative
22 weightings of Factor 3 (maximum day) and Factor 4 (maximum hour) for the
23 operation and maintenance of mains were based on footage of mains,
24 serving maximum day and maximum hour functions. The development of

1 these weighted factors, referenced as Factor 6, is presented on page II-18 of
2 SWPA Exhibit No. PRH-1.

3 Costs associated with meters and services facilities were allocated to
4 customer classifications in proportion to the capital costs of the sizes and
5 quantities of meters and services serving each classification. The
6 development of factors for meters and services, referenced as Factor 8 and
7 Factor 9, is presented on pages II-19 through II-22 of SWPA Exhibit No.
8 PRH-1.

9 Costs for customer accounting, billing and collecting were allocated
10 on the basis of the number of customers for each classification, and costs
11 for meter reading were allocated on the basis of metered customers. The
12 development of these factors, referenced as Factor 12 and Factor 13, is
13 presented on page II-24 of SWPA Exhibit No. PRH-1.

14 Administrative and general costs were allocated on the basis of
15 allocated direct costs excluding those costs, such as purchased water,
16 power, and chemicals which require little administrative and general
17 expense. The development of factors for this allocation, referenced as
18 Factor 14, is presented on page II-25 of SWPA Exhibit No. PRH-1.

19 Annual depreciation accruals were allocated on the basis of the
20 function of the facilities represented by the depreciation expense for each
21 depreciable plant account. The original cost less depreciation of utility plant
22 in service was similarly allocated for the purpose of developing factors,
23 referenced as Factor 18, for allocating items such as income taxes and

1 return. The development of Factor 18 is presented on pages II-27 through
2 II-29 of SWPA Exhibit No. PRH-1.

3 **Q. What was the source of the total cost of service data set forth in**
4 **column 3 of Schedule D of SWPA Exhibit No. PRH-1?**

5 A. The pro forma costs of service are set forth in SWPA Exhibit No. 2,
6 Schedule CEH-1.

7 **Q. Refer to Schedule E, pages II-11 through II-15 of SWPA Exhibit No.**
8 **PRH-1, and explain the source of the system maximum day and**
9 **maximum hour ratios used in the development of factors referenced as**
10 **Factors 2, 3 and 4.**

11 A. The ratios were based on a review of experienced Company data. The
12 maximum day ratio of 1.3 times the average day approximates the ratio of
13 maximum daily send-out experienced by the Company in past years. The
14 system maximum hour ratio of 1.8 times the average hour was estimated
15 based on the relationship of system maximum hour ratios to maximum day
16 ratios.

17 **Q. How are the customer class extra capacity factors determined?**

18 A. The customer class extra capacity factors were primarily based on the
19 customer class demand study conducted for the last rate case.

20 **Q. What factors were considered in estimating the maximum day extra**
21 **capacity and maximum hour extra capacity demands used for the**
22 **customer classifications in the development of Factors 2, 3 and 4?**

23 A. The estimated demands were based on judgment which considered field
24 studies of actual customer class demands conducted for the Company, field

1 observations of the service areas of the Company, field studies of similar
2 service areas in Pennsylvania, and generally-accepted customer class
3 maximum day and maximum hour demand ratios.

4 **Q. Please describe the reallocation of public fire costs.**

5 A. The cost of service study reallocates the unrecovered portion of public fire
6 protection to the residential, commercial, industrial and public classifications.
7 This was done pursuant to Section 1328 of the Public Utility Code which
8 states that public fire hydrant rates may only recover 25% of the cost of
9 service and the unrecovered portion should be recovered in the other
10 classes' fixed charges.

11 **Q. How did you allocate the unrecovered portion of public fire service?**

12 A. Based on the requirement that these costs are to be recovered in fixed
13 charges, I allocated the unrecovered public fire costs using Factor 20, which
14 is based on the meter equivalents of the residential, commercial, industrial,
15 large industrial and public classifications.

16 **Q. Have you summarized the results of your cost allocation study?**

17 A. Yes. The results are summarized in columns 1, 2 and 3 of Schedule A on
18 page II-2 of SWPA Exhibit No. PRH-1. Column 2 sets forth the total
19 allocated pro forma cost of service as of December 31, 2019 for each
20 customer classification identified in column 1. Column 3 presents each
21 customer classification's cost responsibility as a percent of the total cost.

22 **Q. Have you compared these cost responsibilities with the proportionate**
23 **revenue under existing rates for each customer classification?**

1 A. Yes. A comparison of the allocated cost responsibilities and the percentage
2 revenue under existing rates can be made by comparing columns 3 and 5 of
3 Schedule A of SWPA Exhibit No. PRH-1. A similar comparison of the
4 percentage cost responsibilities (relative cost of service) and the percentage
5 of pro forma revenues (relative revenues) under proposed rates can be
6 made by comparing columns 3 and 7 of Schedule A of SWPA Exhibit No.
7 PRH-1.

8

9

CUSTOMER RATE DESIGN

10 **Q. What are the appropriate factors to be considered in the design of the**
11 **rate structure?**

12 A. In preparing a rate structure, one should consider the allocated costs of
13 service, the impact of radical changes from the present rate structure, the
14 understandability and ease of application of the rate structure, community
15 and social influences, and the value of service. General guidelines should
16 be developed with management to determine the extent to which each of
17 these criteria is to be incorporated in the rate structure to be designed,
18 inasmuch as the pricing of a commodity or service is a function of
19 management.

20 **Q. Did management provide rate design guidelines to you?**

21 A. Yes, it did. The guidelines included (1) increase customer charges to be
22 more in line with customer costs, (2) develop private fire rates to move
23 toward the cost of providing private fire service, (3) maintain the blocking
24 structure by customer class that was implemented in the last case, (4)

1 increase the public fire hydrant charges that are below 25% of the cost of
2 service to a rate that moves toward 25% of the cost of service, (5) propose
3 rates for Mahoning that are the same as the rates proposed for all
4 customers, and (6) increase rates by customer classification in a manner
5 that moves the revenues recovered from each classification toward the
6 indicated cost of service.

7 **Q. Do the proposed rates comply with these guidelines?**

8 A. Yes, they do.

9 **Q. Please describe the rate structures for each classification.**

10 A. The existing residential rate structure consists of monthly customer charges,
11 which vary by meter size, and a single block consumption rate. The single
12 block structure for residential customers is appropriate because larger-use
13 residential customers do not typically have better load factors and, therefore,
14 do not warrant lower consumption rates as consumption increases. This
15 proposed single block structure results in a consumption rate of \$0.9670 per
16 hundred gallons.

17 **Q. Please explain the rate structure for non-residential customers.**

18 A. The proposed non-residential rate structure will continue with the same
19 customer charges by meter size as the proposed residential customer
20 charges and a two-block consumption rate structure, except for large
21 industrial. The first block rate (up to 25,000 gallons per month) for the non-
22 residential classes is the same as the residential single block rate. The
23 second block rate (usage over 25,000 gallons per month) varies among the
24 commercial, industrial and public classes and is lower than the first block

1 rate. This enables the proposed revenues to be more aligned with the
2 allocated cost of service for these classes.

3 The proposed rate structure for the large industrial class is the same
4 basic structure under existing rates, except the take-or-pay provision is
5 based on a monthly requirement of 7,000,000 gallons per month rather than
6 the existing 84 million gallons per year. The proposed customer charges
7 are the same as the other classes and there is a single consumption rate.

8 **Q. Please explain the increases in the customer charges.**

9 A. The existing customer charges for residential, commercial, industrial, large
10 industrial and public classes are well-below cost of service. The proposed
11 customer charges reflect an approximate 9.1% increase over the existing
12 base rate customer charges.

13 The increase to the 5/8-inch customer charge is from \$13.75 to
14 \$15.00 per month. This increase reflects the movement toward the indicated
15 cost of service of \$18.18 per month based on fully-allocated customer costs
16 and \$14.96 per month based on direct customer costs. The customer cost
17 analyses include the unrecovered cost of Public Fire Service of \$3.68 per
18 month. The calculation of customer costs is shown on Schedule H of SWPA
19 Exhibit No. PRH-1.

20 **Q. What changes are you proposing to Private Fire Protection rates?**

21 A. The existing private fire protection rates generate revenues that are below
22 the cost of service for private fire. Therefore, the proposed rates for private
23 fire protection are increased approximately 17% to move revenues toward
24 the indicated cost of service.

1 **Q. Please explain the proposed Public Fire Protection hydrant rates.**

2 A. The current cost of providing public fire protection service is \$110.03 per
3 hydrant per month. In House Bill No. 714 (66 Pa. C.S. § 1328), the
4 legislature required that there be no increase in public fire rates if the
5 present revenues recovered more than 25 percent of the cost of service.
6 The present monthly rate per hydrant is \$24.17 per month in the Harrisburg
7 service area, \$25.83 per month in Mechanicsburg, \$18.33 per month in
8 Bloomsburg and Dallas. All of these rates are below 25% of the cost of
9 service.

10 The Public Fire Hydrant Rate calculated at 25% of the cost of service
11 is approximately \$27.51 per month. The public hydrant rate for Bloomsburg
12 and Dallas of \$18.33 per month, therefore will be increased to \$20.00 per
13 month. The \$24.17 per month charge in Harrisburg will be increased to the
14 Mechanicsburg rate of \$25.83 per month. The rate for Mahoning will be
15 established at \$20.00 per month. Although the proposed rates still remain
16 below the 25% cost of service level, the proposed rates reflect a movement
17 toward the 25% cost of service level.

18 **Q. Please explain the proposed Standby Service Tariff.**

19 A. The Company currently has several customers that have their own water
20 supply but rely on the Company for back-up supply in case the customers'
21 supply fails or is out of service. The Company has provided service to these
22 customers when needed but only receives a meter charge for the months
23 when no water is provided. In order to reflect and recover the costs
24 associated with providing standby service, the Company is proposing the

1 Standby Service Tariff. This tariff would be available to any non-residential
2 customer that requires standby service.

3 **Q. How were the standby rates determined?**

4 A. The monthly standby charge is based on the capital costs (return, taxes and
5 depreciation expense) associated with base and extra capacity cost
6 functions. This results in a monthly charge of \$153.00 per thousand gallons
7 of nominated daily supply required for standby service. See Schedule J of
8 SWPA Exhibit No. PRH-1. The charge for actual usage during the time
9 when the customer's supply is unavailable is \$3.10 per thousand gallons
10 which recovers the remaining operating costs associated with base and
11 extra capacity functions.

12 **Q. Do the proposed rates result in movement toward the cost of service
13 for each classification?**

14 A. Yes, as Schedule A on page II-2 of SWPA Exhibit No. PRH-1 demonstrates,
15 the revenues under proposed rates are better aligned with the cost of
16 service by classification than the revenues under present rates.

17 **Q. Have you prepared comparisons of present and proposed rates for
18 each classification?**

19 A. Yes. Schedule I of SWPA Exhibit No. PRH-1 presents comparisons of the
20 present and proposed rate schedules. The schedule shows the customer
21 charges and the consumption rates for each classification, as well as private
22 and public fire rates.

23 **Q. Have you prepared proof of revenue schedules under present and
24 proposed rates?**

1 A. The Company has provided proof of revenues from the application of
2 present and proposed rates to the bill analysis in SWPA Exhibit No. CEH-1.

3 **Q. Please describe the requirements of PA PUC Opinion and Order at**
4 **Docket No. A-2017-2626908, concerning the application for a certificate**
5 **of public convenience in a portion of Montour Township, Columbia**
6 **County and in a portion of Cooper Township, Montour County.**

7 A. In response to modified paragraphs 5a. and 5b. of the Order, SWPA Exhibit
8 No. PRH-2 was prepared to provide a cost of service study and rate design
9 that follows the same methodology in SWPA Exhibit No. PRH-1, and which
10 removes all costs and revenues associated with the operations of the
11 subject water main extension within the subject territory.

12 **Q. Does this complete your testimony at this time?**

13 A. Yes, it does.

PAUL R. HERBERT – LIST OF CASES TESTIFIED

	<u>Year</u>	<u>Jurisdiction</u>	<u>Docket No.</u>	<u>Client/Utility</u>	<u>Subject</u>
1.	1983	Pa. PUC	R-832399	T. W. Phillips Gas and Oil Co.	Pro Forma Revenues
2.	1989	Pa. PUC	R-891208	Pennsylvania-American Water Company	Bill Analysis and Rate Application
3.	1991	WV PSC	91-106-W-MA	Clarksburg Water Board	Revenue Requirements (Rule 42)
4.	1992	Pa. PUC	R-922276	North Penn Gas Company	Cash Working Capital
5.	1992	NJ BPU	WR92050532J	The Atlantic City Sewerage Company	Cost Allocation and Rate Design
6.	1994	Pa. PUC	R-943053	The York Water Company	Cost Allocation and Rate Design
7.	1994	Pa. PUC	R-943124	City of Bethlehem	Revenue Requirements, Cost Allocation, Rate Design and Cash Working Capital
8.	1994	Pa. PUC	R-943177	Roaring Creek Water Company	Cash Working Capital
9.	1994	Pa. PUC	R-943245	North Penn Gas Company	Cash Working Capital
10.	1994	NJ BPU	WR94070325	The Atlantic City Sewerage Company	Cost Allocation and Rate Design
11.	1995	Pa. PUC	R-953300	Citizens Utilities Water Company of Pennsylvania	Cost Allocation and Rate Design
12.	1995	Pa. PUC	R-953378	Apollo Gas Company	Rev. Requirements and Rate Design
13.	1995	Pa. PUC	R-953379	Carnegie Natural Gas Company	Rev. Requirements and Rate Design
14.	1996	Pa. PUC	R-963619	The York Water Company	Cost Allocation and Rate Design
15.	1997	Pa. PUC	R-973972	Consumers Pennsylvania Water Company Shenango Valley Division	Cash Working Capital
16.	1998	Ohio PUC	98-178-WS-AIR	Citizens Utilities Company of Ohio	Water and Wastewater Cost Allocation and Rate Design
17.	1998	Pa. PUC	R-984375	City of Bethlehem - Bureau of Water	Revenue Requirement, Cost Allocation and Rate Design
18.	1999	Pa. PUC	R-994605	The York Water Company	Cost Allocation and Rate Design
19.	1999	Pa. PUC	R-994868	Philadelphia Suburban Water Company	Cost Allocation and Rate Design
20.	1999	WV PSC	99-1570-W-MA	Clarksburg Water Board	Revenue Requirements (Rule 42), Cost Allocation and Rate Design
21.	2000	Ky. PSC	2000-120	Kentucky-American Water Company	Cost Allocation and Rate Design
	2000	Pa. PUC	R-00005277	PPL Gas Utilities	Cash Working Capital
	2000	NJ BPU	WR00080575	Atlantic City Sewerage Company	Cost Allocation and Rate Design
24.	2001	Ia. St Util Bd	RPU-01-4	Iowa-American Water Company	Cost Allocation and Rate Design
25.	2001	Va. St. CC	PUE010312	Virginia-American Water Company	Cost Allocation and Rate Design
26.	2001	WV PSC	01-0326-W-42T	West-Virginia American Water Company	Cost Allocation And Rate Design
27.	2001	Pa. PUC	R-016114	City of Lancaster	Tapping Fee Study
28.	2001	Pa. PUC	R-016236	The York Water Company	Cost Allocation and Rate Design
29.	2001	Pa. PUC	R-016339	Pennsylvania-American Water Company	Cost Allocation and Rate Design
30.	2001	Pa. PUC	R-016750	Philadelphia Suburban Water Company	Cost Allocation and Rate Design
31.	2002	Va.St.CC	PUE-2002-0375	Virginia-American Water Company	Cost Allocation and Rate Design
32.	2003	Pa. PUC	R-027975	The York Water Company	Cost Allocation and Rate Design
33.	2003	Tn Reg Auth	03-	Tennessee-American Water Company	Cost Allocation and Rate Design
34.	2003	Pa. PUC	R-038304	Pennsylvania-American Water Company	Cost Allocation and Rate Design
35.	2003	NJ BPU	WR03070511	New Jersey-American Water Company	Cost Allocation and Rate Design
36.	2003	Mo. PSC	WR-2003-0500	Missouri-American Water Company	Cost Allocation and Rate Design
37.	2004	Va.St.CC	PUE-200 -	Virginia-American Water Company	Cost Allocation and Rate Design
38.	2004	Pa. PUC	R-038805	Pennsylvania Suburban Water Company	Cost Allocation and Rate Design
39.	2004	Pa. PUC	R-049165	The York Water Company	Cost Allocation and Rate Design
40.	2004	NJ BPU	WRO4091064	The Atlantic City Sewerage Company	Cost Allocation and Rate Design
41.	2005	WV PSC	04-1024-S-MA	Morgantown Utility Board	Cost Allocation and Rate Design
42.	2005	WV PSC	04-1025-W-MA	Morgantown Utility Board	Cost Allocation and Rate Design
43.	2005	Pa. PUC	R-051030	Aqua Pennsylvania, Inc.	Cost Allocation and Rate Design
44.	2006	Pa. PUC	R-051178	T. W. Phillips Gas and Oil Co.	Cost Allocation and Rate Design
45.	2006	Pa. PUC	R-061322	The York Water Company	Cost Allocation and Rate Design
46.	2006	NJ BPU	WR-06030257	New Jersey American Water Company	Cost Allocation and Rate Design
47.	2006	Pa. PUC	R-061398	PPL Gas Utilities, Inc.	Cost Allocation and Rate Design
48.	2006	NM PRC	06-00208-UT	New Mexico American Water Company	Cost Allocation and Rate Design
49.	2006	Tn Reg Auth	06-00290	Tennessee American Water Company	Cost Allocation and Rate Design
	2007	Ca. PUC	U-339-W	Suburban Water Systems	Water Conservation Rate Design
	2007	Ca. PUC	U-168-W	San Jose Water Company	Water Conservation Rate Design
52.	2007	Pa. PUC	R-00072229	Pennsylvania American Water Company	Cost Allocation and Rate Design
53.	2007	Ky. PSC	2007-00143	Kentucky American Water Company	Cost Allocation and Rate Design
54.	2007	Mo. PSC	WR-2007-0216	Missouri American Water Company	Cost Allocation and Rate Design
55.	2007	Oh. PUC	07-1112-WS-IR	Ohio American Water Company	Cost Allocation and Rate Design

PAUL R. HERBERT – LIST OF CASES TESTIFIED

	<u>Year</u>	<u>Jurisdiction</u>	<u>Docket No.</u>	<u>Client/Utility</u>	<u>Subject</u>
56.	2007	Il. CC	07-0507	Illinois American Water Company	Customer Class Demand Study
57.	2007	Pa. PUC	R-00072711	Aqua Pennsylvania, Inc.	Cost Allocation and Rate Design
58.	2007	NJ BPU	WR07110866	The Atlantic City Sewerage Company	Cost Allocation and Rate Design
59.	2007	Pa. PUC	R-00072492	City of Bethlehem – Bureau of Water	Revenue Reqmts, Cost Alloc.
60.	2007	WV PSC	07-0541-W-MA	Clarksburg Water Board	Cost Allocation and Rate Design
61.	2007	WV PSC	07-0998-W-42T	West Virginia American Water Company	Cost Allocation and Rate Design
62.	2008	NJ BPU	WR08010020	New Jersey American Water Company	Cost Allocation and Rate Design
63.	2008	Va St CC	PUE-2008-0009	Virginia American Water Company	Cost Allocation and Rate Design
64.	2008	Tn.Reg.Auth.	08-00039	Tennessee American Water Company	Cost Allocation and Rate Design
65.	2008	Mo PSC	WR-2008-0311	Missouri American Water Company	Cost Allocation and Rate Design
66.	2008	De PSC	08-96	Artesian Water Company, Inc.	Cost Allocation and Rate Design
67.	2008	Pa PUC	R-2008-2032689	Penna. American Water Co. – Coatesville Wastewater	Cost Allocation and Rate Design
68.	2008	AZ CC.	W-01303A-08-0227 SW-01303A-08-0227	Arizona American Water Co. - Water - Wastewater	Cost Allocation and Rate Design
69.	2008	Pa PUC	R-2008-2023067	The York Water Company	Cost Allocation and Rate Design
70.	2008	WV PSC	08-0900-W-42T	West Virginia American Water Company	Cost Allocation and Rate Design
71.	2008	Ky PSC	2008-00250	Frankfort Electric and Water Plant Board	Cost Allocation and Rate Design
72.	2008	Ky PSC	2008-00427	Kentucky American Water Company	Cost Allocation and Rate Design
73.	2009	Pa PUC	2008-2079660	UGI – Penn Natural Gas	Cost of Service Allocation
74.	2009	Pa PUC	2008-2079675	UGI – Central Penn Gas	Cost of Service Allocation
75.	2009	Pa PUC	2009-2097323	Pennsylvania American Water Co.	Cost Allocation and Rate Design
76.	2009	Ia St Util Bd	RPU-09-	Iowa-American Water Company	Cost Allocation and Rate Design
77.	2009	Il CC	09-0319	Illinois-American Water Company	Cost Allocation and Rate Design
78.	2009	Oh PUC	09-391-WS-AIR	Ohio-American Water Company	Cost Allocation and Rate Design
79.	2009	Pa PUC	R-2009-2132019	Aqua Pennsylvania, Inc.	Cost Allocation and Rate Design
80.	2009	Va St CC	PUE-2009-0059	Aqua Virginia, Inc.	Cost Allocation (only)
	2009	Mo PSC	WR-2010-0131	Missouri American Water Company	Cost Allocation and Rate Design
	2010	VaSt CorpCom	PUE-2010-00001	Virginia American Water Company	Cost Allocation and Rate Design
83.	2010	Ky PSC	2010-00036	Kentucky American Water Company	Cost Allocation and Rate Design
84.	2010	NJ BPU	WR10040260	New Jersey American Water Company	Cost Allocation and Rate Design
85.	2010	Pa PUC	2010-2167797	T.W. Phillips Gas and Oil Co.	Cost Allocation and Rate Design
86.	2010	Pa PUC	2010-2166212	Pennsylvania American Water Co. - Wastewater	Cost Allocation and Rate Design
87.	2010	Pa PUC	R-2010-2157140	The York Water Company	Cost Allocation and Rate Design
88.	2010	Ky PSC	2010-00094	Northern Kentucky Water District	Cost Allocation and Rate Design
89.	2010	WV PSC	10-0920-W-42T	West Virginia American Water Co.	Cost Allocation and Rate Design
90.	2010	Tn Reg Auth	10-00189	Tennessee American Water Company	Cost Allocation and Rate Design
91.	2010	Ct PU RgAth	10-09-08	United Water Connecticut	Cost Allocation and Rate Design
92.	2010	Pa PUC	R-2010-2179103	City of Lancaster-Bureau of Water	Rev Rqmts, Cst Alloc/Rate Design
93.	2011	Pa PUC	R-2010-2214415	UGI Central Penn Gas, Inc.	Cost Allocation
94.	2011	Pa PUC	R-2011-2232359	The Newtown Artesian Water Co.	Revenue Requirement
95.	2011	Pa PUC	R-2011-2232243	Pennsylvania-American Water Co.	Cost Allocation and Rate Design
96.	2011	Pa PUC	R-2011-2232985	United Water Pennsylvania Inc.	Demand Study, COS/Rate Design
97.	2011	Pa PUC	R-2011-2244756	City of Bethlehem-Bureau of Water	Rev. Rqmts/COS/Rate Design
98.	2011	Mo PSC	WR-2011-0337-338	Missouri American Water Company	Cost Allocation and Rate Design
99.	2011	Oh PUC	11-4161-WS-AIR	Ohio American Water Company	Cost Allocation and Rate Design
100.	2011	NJ BPU	WR11070460	New Jersey American Water Company	Cost Allocation and Rate Design
101.	2011	Id PUC	UWI-W-11-02	United Water Idaho Inc.	Cost Allocation and Rate Design
102.	2011	Il CC	11-0767	Illinois-American Water Company	Cost Allocation and Rate Design
103.	2011	Pa PUC	R-2011-2267958	Aqua Pennsylvania, Inc.	Cost Allocation and Rate Design
104.	2011	VaStCom	2011-00099	Aqua Virginia, Inc.	Cost Allocation
105.	2011	VaStCom	2011-00127	Virginia American Water Company	Cost Allocation and Rate Design
106.	2012	TnRegAuth	12-00049	Tennessee American Water Company	Cost Allocation and Rate Design
107.	2012	Ky PSC	2012-00072	Northern Kentucky Water District	Cost Allocation and Rate Design
108.	2012	Pa PUC	R-2012-2310366	Lancaster, City of – Sewer Fund	Cost Allocation and Rate Design
109.	2012	Ky PSC	2012-00520	Kentucky American Water Co.	Cost Allocation and Rate Design
110.	2013	WV PSC	12-1649-W-42T	West Virginia American Water Co.	Cost Allocation and Rate Design
111.	2013	Ia St Util Bd	RPU-2013-000_	Iowa American Water Company	Cost Allocation and Rate Design
112.	2013	Pa PUC	R-2013-2355276	Pennsylvania American Water Co.	Cost Allocation and Rate Design
113.	2013	Pa PUC	R-2012-2336379	The York Water Company	Cost Allocation and Rate Design
114.	2013	Pa PUC	R-2013-2350509	City of DuBois – Bureau of Water	Cost Allocation and Rate Design

PAUL R. HERBERT – LIST OF CASES TESTIFIED

	<u>Year</u>	<u>Jurisdiction</u>	<u>Docket No.</u>	<u>Client/Utility</u>	<u>Subject</u>
115.	2013	Pa PUC	R-2013-2390244	City of Bethlehem – Bureau of Water	Cost Allocation and Rate Design
116.	2014	Pa PUC	R-2014-2418872	City of Lancaster – Bureau of Water	Cost Allocation and Rate Design
117.	2014	Pa PUC	R-2014-2428304	Borough of Hanover	Cost Allocation and Rate Design
118.	2014	VASStCom	2014-00045	Aqua Virginia, Inc.	Cost Allocation
119.	2015	NJ BPU	WR15010035	New Jersey American Water Company	Cost Allocation and Rate Design
120.	2015	Pa PUC	R-2015-2462723	United Water PA	Cost Allocation and Rate Design
121.	2015	WV PSC	15-0676-W-42T	West Virginia American Water Company	Cost Allocation and Rate Design
122.	2015	Id PUC	UWI-W-15-01	United Water Idaho Inc.	Pro Forma Revenues
123.	2015	Mo PSC	WR-2015-0301	Missouri American Water Company	Cost Allocation and Rate Design
124.	2015	Va St Com	PUE-2015-00097	Virginia American Water Company	Cost Allocation and Rate Design
125.	2015	Hi PSC	2015-0350	HOH Utilities, Inc.	Cost Allocation and Rate Design
126.	2016	Ky PSC	2015-00418	Kentucky American Water Company	Cost Allocation and Rate Design
127.	2016	Pa PUC	R-2015-2518438	UGI Utilities, Inc. - Gas Division	Cost Allocation
128.	2016	Il CC	16-0093	Illinois American Water Company	Cost Alloc/Rate Dsgn/Demand Sty
129.	2016	NY PSC	16-W-0130	SUEZ Water New York Inc.	Cost Allocation and Rate Design
130.	2016	Oh PUC	16-0907-WW-AIR	Aqua Ohio, Inc.	Cost Allocation and Rate Design
131.	2016	Ia St Util Bd	RPU-2016-0002	Iowa American Water Company	Cost Allocation and Rate Design
132.	2016	NJ BPU	WR16100957	Atlantic City Sewerage Company	Cost Allocation and Rate Design
133.	2017	Pa PUC	R-2016-2580030	UGI Penn Natural Gas, Inc.	Cost Allocation and Rate Design
134.	2017	Pa PUC	R-2017-2595853	Pennsylvania American Water Co.	Cost Allocation and Rate Design
135.	2017	IL CC	17-0259	Aqua Illinois, Inc.	Cost Allocation and Rate Design
136.	2017	NY PSC	17-W-0528	SUEZ Water Owego-Nichols, Inc.	Cost Allocation and Rate Design
137.	2017	NJ BPU	WR17090985	New Jersey American Water Company	Cost Allocation and Rate Design
138.	2017	Ca PUC		San Jose Water Company	Rate Design

SUEZ WATER PENNSYLVANIA INC.

HARRISBURG, PENNSYLVANIA

COST OF SERVICE
ALLOCATION STUDY
FOR THE TEST YEAR ENDED
DECEMBER 31, 2019



Excellence Delivered As Promised

SUEZ WATER PENNSYLVANIA INC.
Harrisburg, Pennsylvania

COST OF SERVICE
ALLOCATION STUDY
FOR THE TEST YEAR ENDED
DECEMBER 31, 2019

GANNETT FLEMING VALUATION AND RATE CONSULTANTS, LLC
Harrisburg, Pennsylvania



Gannett Fleming

Excellence Delivered As Promised

April 27, 2018

SUEZ Water Pennsylvania Inc.
4211 East Park Circle
Harrisburg, PA 17111

Attention Mr. John D. Hollenbach
Vice President, Mid Atlantic Division

Gentlemen:

Pursuant to your request, we have conducted a cost of service allocation study based on the revenue requirements estimated for the test year ended December 31, 2019.

The attached report presents the results of the allocation study, as well as supporting schedules which set forth the detailed cost allocation calculations and the proposed schedule of rates. Schedule A presents a comparison of the cost of service by customer classification with the pro forma revenues produced by each classification under present and proposed rates.

Respectfully submitted,

GANNETT FLEMING VALUATION
AND RATE CONSULTANTS, LLC

PAUL R. HERBERT
President

PRH:mle

063817.200

Gannett Fleming Valuation and Rate Consultants, LLC

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PART I. INTRODUCTION

SUEZ WATER PENNSYLVANIA INC.
COST OF SERVICE ALLOCATION STUDY
FOR THE TEST YEAR ENDED DECEMBER 31, 2019

PART I. INTRODUCTION

PLAN OF REPORT

The report sets forth the results of the cost of service allocation study based on revenue requirements as of December 31, 2019, for SUEZ Water Pennsylvania Inc.. Part I, Introduction, contains statements with respect to the basis of the study, the procedures employed, and a summary of the results of the study. Part II, Cost of Service by Customer Classification, presents detailed schedules of the allocation of costs to specific customer classifications, as well as the bases for the allocations. Schedule A in Part II summarizes the cost allocation and the revenues produced under present and proposed rates. Part III sets forth present and proposed rates with bill comparisons.

BASIS OF STUDY

The purpose of the cost allocation study was to determine the relative cost of service responsibilities of the several customer classifications within each operating district, based on considerations of quantity of water consumed, variability of rate of consumption, and costs associated with customer metering, billing and accounting. The allocation study incorporated generally-accepted principles and procedures for allocating the several categories of cost to customer classifications in proportion to each classification's use of facilities, commodities and services required in providing water service.

ALLOCATION PROCEDURES

The allocation study was based on the Base-Extra Capacity Method for allocating costs to customer classifications. The method is described in the 2017 and prior editions of the Water Rates Manual published by the American Water Works Association. The four basic categories of cost responsibility are base, extra capacity, customer, and fire protection costs. The following discussion presents a brief description of these costs and the manner in which they were allocated.

Base Costs are costs that tend to vary with the quantity of water used, plus costs associated with supplying, treating, pumping, and distributing water to customers under average load conditions, without the elements necessary to meet peak demands. Base costs were allocated to customer classifications on the basis of average daily usage.

Extra Capacity Costs are costs associated with meeting usage requirements in excess of the average. They include operating and capital costs for additional plant and system capacity beyond that required for average use. The extra capacity costs in this study are subdivided into costs necessary to meet maximum day extra demand and costs to meet maximum hour extra demand. The extra capacity costs were allocated to customer classifications on the bases of each classification's maximum day and hour usage in excess of average usage.

Customer Costs are costs associated with serving customers regardless of their usage or demand characteristics. Customer costs include the operating and capital costs related to meters and services, meter reading costs, and billing and collecting costs. The customer costs were allocated on the bases of the capital cost of meters and services, and the number of customers.

Fire Protection Costs are costs associated with providing the facilities to meet the potential peak demand of fire protection service. Fire Protection costs are subdivided into costs to meet Public Fire Protection and Private Fire Protection demands. The extra capacity costs assigned to fire protection service were allocated to Public and Private Fire Protection on the basis of the total relative demands of the hydrants and fire service lines, sized to provide fire protection.

RESULTS OF STUDY

The results of the cost of service allocation study are set forth in Part II. The data summarized in Schedule A, Comparison of Pro Forma Cost of Service with Revenues Under Present and Proposed Rates for the Test Year Ended December 31, 2019, constitute the principal results of the cost allocation study and subsequent rate designs.

The cost of service by customer classification shown in column 2 of Schedule A is developed in Schedule B, Cost of Service for the Twelve Months Ended December 31, 2019, Allocated to Customer Classifications. The allocation of the total cost of service to the several customer classifications was performed by applying the allocation factors referenced in column 2 of Schedule B to the cost of service set forth in column 3. The bases for the allocation factors are presented in Schedule C.

Schedule D sets forth the experienced average day and maximum day system sendout and the maximum day ratios from 2000 through 2017. Schedule E presents the basis for allocating demand related costs of fire service to private and public fire protection classifications.

PART II. COST OF SERVICE BY CUSTOMER CLASSIFICATION

SUEZ WATER PENNSYLVANIA INC.

COMPARISON OF COST OF SERVICE WITH REVENUES UNDER PRESENT AND PROPOSED RATES
FOR THE TEST YEAR ENDED DECEMBER 31, 2019

Customer Classification (1)	Cost of Service		Revenues, Present Rates*		Revenues, Proposed Rates		Proposed Increase	
	Amount (2)	Percent (3)	Amount (4)	Percent (5)	Amount (6)	Percent (7)	Amount (8)	Percent Increase (9)
Residential	\$ 30,869,334	58.1%	\$ 29,345,020	62.5%	\$ 32,635,438	61.3%	\$ 3,290,418	11.2%
Commercial	14,589,168	27.4%	11,958,637	25.5%	13,961,556	26.2%	2,002,919	16.7%
Industrial	923,460	1.7%	766,289	1.6%	888,613	1.7%	122,324	16.0%
Large Industrial	1,294,802	2.4%	701,022	1.5%	853,358	1.6%	152,336	21.7%
Public Authority	2,323,622	4.4%	1,835,763	3.9%	2,173,296	4.1%	337,534	18.4%
Private Fire Service	2,203,682	4.1%	1,446,048	3.1%	1,691,887	3.2%	245,840	17.0%
Public Fire Service	<u>1,008,895</u>	<u>1.9%</u>	<u>923,861</u>	<u>2.0%</u>	<u>1,008,895</u>	<u>1.9%</u>	<u>85,034</u>	9.2%
Total Sales	53,212,963	<u>100.0%</u>	46,976,640	<u>100.1%</u>	53,213,044	<u>100.0%</u>	6,236,405	13.3%
Other Revenues	<u>405,611</u>		<u>405,611</u>		<u>405,611</u>		<u>-</u>	0.0%
Total	<u>\$ 53,618,574</u>		<u>\$ 47,382,250</u>		<u>\$ 53,618,655</u>		<u>\$ 6,236,405</u>	13.2%

* Includes DSIC Revenue.

SUEZ WATER PENNSYLVANIA INC

DEVELOPMENT OF RATE OF RETURN BY CUSTOMER CLASSIFICATION
UNDER PRESENT RATES

ITEM (1)	COST OF SERVICE (2)	RESIDENTIAL (3)	COMMERCIAL (4)	INDUSTRIAL (5)	LARGE INDUSTRIAL (6)	PUBLIC (7)	FIRE PROTECTION	
							PRIVATE (8)	PUBLIC (9)
1 REVENUES FROM SALES	46,976,640	29,345,020	11,958,637	766,289	701,022	1,835,763	1,446,048	923,861
2. OTHER REVENUES	405,611	217,488	105,296	6,936	9,937	17,401	16,143	32,408
3. TOTAL OPERATING REVENUES	47,382,250	29,562,509	12,063,933	773,225	710,959	1,853,164	1,462,191	956,269
4. LESS: OPERATING EXPENSES (INCLUDES REALLOCATION OF FIRE)	28,689,587	18,234,441	8,127,696	504,546	739,506	1,278,691	877,544	(1,072,837)
5. RETURN AND INCOME TAXES	18,692,663	11,328,068	3,936,237	268,679	(28,546)	574,473	584,647	2,029,106
6. LESS: TAXABLE EXCLUSIONS (FACTOR 18)	5,186,994	2,560,819	1,334,614	88,179	117,745	219,410	279,579	586,649
7. TAXABLE INCOME	13,505,669	8,767,249	2,601,624	180,500	(146,291)	355,063	305,068	1,442,457
8. LESS: INCOME TAXES (TAX. INC.)	3,732,788	2,423,151	719,054	49,888	(40,433)	98,135	84,317	398,676
9. NET RETURN (Line 5 - Line 8)	14,959,875	8,904,916	3,217,183	218,791	11,887	476,338	500,330	1,630,430
10. ORIGINAL COSTS MEASURE OF VALUE	243,448,860	120,187,447	62,627,285	4,141,454	5,536,054	10,297,771	13,119,505	27,539,343
11 RATE OF RETURN, PERCENT	6.14	7.41	5.14	5.28	0.21	4.63	3.81	5.92
12 RELATIVE RATE OF RETURN	1.00	1.21	0.84	0.86	0.03	0.75	0.62	0.96

SUEZ WATER PENNSYLVANIA INC.

DEVELOPMENT OF RATE OF RETURN BY CUSTOMER CLASSIFICATION
UNDER PROPOSED RATES

ITEM (1)	COST OF SERVICE (2)	RESIDENTIAL (3)	COMMERCIAL (4)	INDUSTRIAL (5)	LARGE INDUSTRIAL (6)	PUBLIC (7)	FIRE PROTECTION	
							PRIVATE (8)	PUBLIC (9)
1. REVENUES FROM SALES	53,213,044	32,635,438	13,961,556	888,613	853,358	2,173,296	1,691,887	1,008,895
2. OTHER REVENUES	405,692	215,623	105,134	6,936	9,856	17,360	16,833	33,950
3. TOTAL OPERATING REVENUES	53,618,736	32,851,061	14,066,690	895,549	863,214	2,190,657	1,708,720	1,042,845
4. LESS: OPERATING EXPENSES (INCLUDES REALLOCATION OF FIRE)	28,743,192	18,801,453	8,296,333	507,513	739,985	1,288,750	879,728	(1,770,570)
5. RETURN AND INCOME TAXES	24,875,543	14,049,608	5,770,357	388,036	123,229	901,907	828,993	2,813,415
6. LESS: TAXABLE EXCLUSIONS (FACTOR 18)	5,186,994	2,561,338	1,334,095	88,179	117,745	219,410	279,579	586,649
7. TAXABLE INCOME	19,688,549	11,488,270	4,436,262	299,857	5,484	682,497	549,414	2,226,766
8. LESS: INCOME TAXES (TAX INC)	5,519,128	3,220,412	1,243,581	84,056	1,537	191,319	154,013	624,211
9. NET RETURN (Line 5 - Line 8)	19,356,415	10,829,196	4,526,776	303,979	121,691	710,588	674,980	2,189,204
10. ORIGINAL COSTS MEASURE OF VALUE	243,448,860	120,204,747	62,620,652	4,139,303	5,533,990	10,295,620	13,119,505	27,535,042
11. RATE OF RETURN, PERCENT	7.95	9.01	7.23	7.34	2.20	6.90	5.14	7.95
12. RELATIVE RATE OF RETURN	1.00	1.13	0.91	0.92	0.28	0.87	0.65	1.00

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SUEZ WATER PENNSYLVANIA INC.

COST OF SERVICE FOR THE TWELVE MONTHS ENDED DECEMBER 31, 2019, ALLOCATED TO CUSTOMER CLASSIFICATIONS

Account	Factor Ref.	Cost of Service	Residential	Commercial	Industrial	Large Industrial	Public Authorities	Fire Protection	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	Private	Public
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
OPERATION AND MAINTENANCE EXPENSES									
SOURCE OF SUPPLY EXPENSES									
Employee Salaries	2	525,412	280,675	173,386	12,715	23,749	32,050	998	1,839
Purchased Water	1	182,928	97,793	60,421	4,262	7,976	11,177	457	841
Purchased Water - Mahoning	1	360,835	192,902	119,184	8,407	15,732	22,047	902	1,660
Purchased Power	1	724,633	387,389	239,346	16,884	31,594	44,275	1,812	3,333
Purchased Power - Mahoning	1	11,510	6,153	3,802	268	502	703	29	53
Fuel for Power Production	1	2,099	1,122	693	49	91	128	5	10
Material and Supplies	2	2,727	1,457	900	66	123	166	5	10
Outside Services	2	16,557	8,845	5,464	401	748	1,010	31	58
Outside Services - Mahoning	2	699	374	231	17	32	43	1	2
Rental of Building/Real Property	2	0	0	0	0	0	0	0	0
Transportation Expense	2	18,323	9,788	6,047	443	828	1,118	35	64
Fringe Benefits	2	72,542	38,752	23,939	1,756	3,279	4,425	138	254
Miscellaneous Other	2	0	0	0	0	0	0	0	0
Office Expenses and Utilities	2	2,321	1,240	766	56	105	142	4	8
Uniforms	2	0	0	0	0	0	0	0	0
TOTAL SOURCE OF SUPPLY EXPENSE - OPERATION		1,920,586	1,026,490	634,178	45,324	84,759	117,284	4,418	8,132
Employee Salaries	2	102,994	55,020	33,988	2,492	4,655	6,283	196	360
Fuel for Power Production	1	0	0	0	0	0	0	0	0
Material and Supplies	2	6,066	3,241	2,002	147	274	370	12	21
Outside Services	2	145,795	77,884	48,112	3,528	6,590	8,893	277	510
Outside Services - Mahoning	2	6,159	3,290	2,032	149	278	376	12	22
Uniforms	2	0	0	0	0	0	0	0	0
Transportation Expense	2	46,087	24,619	15,209	1,115	2,083	2,811	88	161
Fringe Benefits	2	177,106	94,610	58,445	4,286	8,005	10,803	337	620
Miscellaneous Other	2	0	0	0	0	0	0	0	0
TOTAL SOURCE OF SUPPLY EXPENSE - MAINTENANCE		484,207	258,663	159,788	11,718	21,886	29,537	920	1,695
TOTAL SOURCE OF SUPPLY EXPENSE		2,404,793	1,285,153	793,966	57,042	106,645	146,821	5,338	9,827
WATER TREATMENT									
Employee Salaries	2	1,349,053	720,664	445,188	32,647	60,977	82,292	2,563	4,722
Purchased Power	1	(19,256)	(10,294)	(6,360)	(449)	(840)	(1,177)	(48)	(89)
Purchased Power - Mahoning	1	(306)	(164)	(101)	(7)	(13)	(19)	(1)	(1)
Chemicals	1	599,527	320,507	198,024	13,969	26,139	36,631	1,499	2,758
Membranes - Bloomsburg	2	0	0	0	0	0	0	0	0
Maintenance - Bloomsburg	2	0	0	0	0	0	0	0	0
Material and Supplies	2	8,723	4,660	2,878	211	394	532	17	31
Testing	2	83,542	44,628	27,569	2,022	3,776	5,096	159	292
Outside Services	2	288,711	154,230	95,275	6,987	13,050	17,611	549	1,010
Outside Services - Mahoning	2	12,196	6,515	4,025	295	551	744	23	43
Transportation Expense	2	133,249	71,182	43,972	3,225	6,023	8,128	253	466
Fringe Benefits	2	525,755	280,858	173,499	12,723	23,764	32,071	999	1,840

SUEZ WATER PENNSYLVANIA INC.

COST OF SERVICE FOR THE TWELVE MONTHS ENDED DECEMBER 31, 2019, ALLOCATED TO CUSTOMER CLASSIFICATIONS

Account	Factor Ref.	Cost of Service	Customer Classifications						
			Residential	Commercial	Industrial	Large Industrial	Public Authorities	Fire Protection	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	Private (9)	Public (10)
Miscellaneous Other	2	561	300	185	14	25	34	1	2
Communication Services	2	0	0	0	0	0	0	0	0
Uniforms, Travel, Rentals and Other	2	6,595	3,523	2,176	160	298	402	13	23
TOTAL WATER TREATMENT EXPENSE - OPERATION		2,988,349	1,596,608	986,329	71,796	134,145	182,347	6,026	11,097
Employee Salaries	2	297,234	158,782	98,087	7,193	13,435	18,131	565	1,040
Fuel for Power Production	1	(1,070)	(572)	(353)	(25)	(47)	(65)	(3)	(5)
Chemicals	1	0	0	0	0	0	0	0	0
Material and Supplies	2	166,642	89,020	54,992	4,033	7,532	10,165	317	583
Outside Services	2	113,417	60,587	37,428	2,745	5,126	6,918	215	397
Outside Services - Mahoning	2	4,791	2,559	1,581	116	217	292	9	17
Rental of Equipment	2	0	0	0	0	0	0	0	0
Transportation Expense	2	30,450	16,267	10,049	737	1,376	1,857	58	107
Fringe Benefits	2	117,977	63,024	38,933	2,855	5,333	7,197	224	413
Miscellaneous Other	2	0	0	0	0	0	0	0	0
Office Expense and Utilities	2	48,038	25,662	15,852	1,163	2,171	2,930	91	168
Uniforms and Travel	2	0	0	0	0	0	0	0	0
TOTAL WATER TREATMENT EXPENSE - MAINTENANCE		777,479	415,329	256,568	18,816	35,144	47,426	1,477	2,720
TOTAL WATER TREATMENT EXPENSE		3,765,828	2,011,937	1,242,897	90,612	169,289	229,773	7,502	13,817
TRANSMISSION AND DISTRIBUTION EXPENSES									
Employee Salaries - Supervision	10	35,839	15,543	9,755	588	226	1,408	2,921	5,397
Employee Salaries - Lines	6	495,291	170,033	140,564	9,757	3,913	23,130	51,956	95,938
Employee Salaries - Meters	8	141,836	106,263	32,863	667	113	1,929	0	0
Purchased Power	1	865,311	462,595	285,812	20,162	37,728	52,870	2,163	3,980
Purchased Power - Mahoning	1	13,744	7,348	4,540	320	599	840	34	63
Material and Supplies	10	8,218	3,564	2,237	135	52	323	670	1,238
Outside Services	10	91,070	39,497	24,789	1,494	574	3,579	7,422	13,715
Outside Services - Mahoning	10	3,847	1,668	1,047	63	24	151	314	579
Rentals of Building/Real Property	10	12,710	5,512	3,460	208	80	500	1,036	1,914
Transportation Expense	10	67,140	29,119	18,276	1,101	423	2,639	5,472	10,111
Fringe Benefits	10	264,039	114,514	71,871	4,330	1,663	10,377	21,519	39,764
Miscellaneous Other	10	0	0	0	0	0	0	0	0
Communication Services	10	0	0	0	0	0	0	0	0
Office Expense, Utilities and Other	10	1,300	564	354	21	8	51	106	196
Uniforms, Dues and Rentals	10	74,089	32,132	20,167	1,215	467	2,912	6,038	11,158
TOTAL T & D EXPENSE OPERATION		2,074,434	988,353	615,735	40,061	45,870	100,709	99,651	184,054
Employee Salaries - Supervision	11	40,816	16,620	9,665	633	257	1,514	3,551	8,575
Employee Salaries - Structures and Improvements	11	121,220	49,361	28,705	1,879	764	4,497	10,546	25,468
Employee Salaries - Reservoirs and Standpipes	5	2,653	908	822	56	77	131	232	427
Employee Salaries - Mains	6	366,505	125,821	104,014	7,220	2,895	17,116	38,446	70,992
Employee Salaries - Services	9	77,155	66,531	7,523	93	8	370	2,631	0
Employee Salaries - Hydrants	7	28,272	0	0	0	0	0	0	28,272

SUEZ WATER PENNSYLVANIA INC.

COST OF SERVICE FOR THE TWELVE MONTHS ENDED DECEMBER 31, 2019, ALLOCATED TO CUSTOMER CLASSIFICATIONS

Account (1)	Factor Ref. (2)	Cost of Service (3)	Customer Classifications				Fire Protection		
			Residential (4)	Commercial (5)	Industrial (6)	Large Industrial (7)	Public Authorities (8)	Private (9)	Public (10)
Employee Salaries - Miscellaneous Plant	11	20,714	8,435	4,905	321	130	768	1,802	4,352
Fuel for Power Production	1	0	0	0	0	0	0	0	0
Material and Supplies	11	89,550	36,465	21,206	1,388	564	3,322	7,791	18,815
Outside Services	11	32,906	13,399	7,792	510	207	1,221	2,863	6,913
Outside Services - Mahoning	11	1,390	566	329	22	9	52	121	292
Rental of Equipment	11	0	0	0	0	0	0	0	0
Transportation Expense	11	67,461	27,470	15,975	1,046	425	2,503	5,869	14,174
Fringe Benefits	11	261,258	106,384	61,866	4,050	1,646	9,693	22,729	54,890
Miscellaneous Other	11	0	0	0	0	0	0	0	0
Office Expense and Utilities	11	606	247	143	9	4	22	53	127
Uniforms	11	0	0	0	0	0	0	0	0
TOTAL T & D EXPENSE - MAINTENANCE		1,110,507	452,207	262,946	17,226	6,986	41,210	96,634	233,299
TOTAL T & D EXPENSE		3,184,941	1,440,560	878,681	57,287	52,856	141,919	196,285	417,353
CUSTOMER ACCOUNTS									
Employee Salaries - Supervision	12	1,405	1,255	112	1	0	5	31	1
Employee Salaries - Meter Reading	13	177,426	162,149	14,460	124	0	692	0	0
Employee Salaries - Billing	12	591,171	528,034	47,116	414	0	2,246	13,065	296
Fuel for Power Production	12	(91)	(82)	(7)	(0)	0	(0)	(2)	(0)
Material and Supplies	12	1,363	1,217	109	1	0	5	30	1
Outside Services	12	280,057	250,147	22,321	196	0	1,064	6,189	140
Outside Services - Mahoning	12	5,494	4,907	438	4	0	21	121	3
Rentals of Building/Real Property	12	0	0	0	0	0	0	0	0
Rental of Equipment	12	(490)	(438)	(39)	(0)	0	(2)	(11)	(0)
Transportation Expense	12	78,984	70,548	6,295	55	0	300	1,746	39
Advertising	12	0	0	0	0	0	0	0	0
Bad Debt Expense	12	190,805	170,427	15,207	134	0	725	4,217	95
Fringe Benefits	12	309,379	276,338	24,658	217	0	1,176	6,837	155
Miscellaneous Other	12	218	195	17	0	0	1	5	0
Communication Services	12	0	0	0	0	0	0	0	0
Office Expense, Utilities and Other	12	(1,108)	(989)	(88)	(1)	0	(4)	(24)	(1)
Uniforms	12	0	0	0	0	0	0	0	0
Postage	12	366,358	327,231	29,199	256	0	1,392	8,097	183
TOTAL CUSTOMER ACCOUNTING EXPENSE		2,000,972	1,790,941	159,797	1,401	0	7,621	40,300	912
ADMINISTRATIVE AND GENERAL EXPENSES									
Employee Salaries	14	1,083,945	637,034	273,046	17,885	26,340	45,092	30,567	53,980
Employee Pension & Benefits	16	2,604,660	1,480,749	679,556	45,061	65,637	113,303	76,317	144,038
Purchased Power	14	22,759	13,375	5,733	376	553	947	642	1,133
Accounting	14	0	0	0	0	0	0	0	0
Legal	14	0	0	0	0	0	0	0	0
Management Fees- Engineering	18	291,817	144,099	75,055	4,961	6,624	12,344	15,729	33,004
Management Fees- Customer Related	12	385,703	344,510	30,740	270	0	1,466	8,524	193
Management Fees- Employee related	16	303,900	172,767	79,288	5,257	7,658	13,220	8,904	16,806

SUEZ WATER PENNSYLVANIA INC.

COST OF SERVICE FOR THE TWELVE MONTHS ENDED DECEMBER 31, 2019, ALLOCATED TO CUSTOMER CLASSIFICATIONS

Account (1)	Factor Ref (2)	Cost of Service (3)	Customer Classifications						Fire Protection	
			Residential (4)	Commercial (5)	Industrial (6)	Large Industrial (7)	Public Authorities (8)	Private (9)	Public (10)	
Management Fees- Other	14	4,378,078	2,572,996	1,102,838	72,238	106,387	182,128	123,462	218,028	
Outside Services	14	246,794	145,041	62,167	4,072	5,997	10,267	6,960	12,290	
Outside Services - Mahoning	14	10,425	6,127	2,626	172	253	434	294	519	
Rental of Building/Real Property	14	60,451	35,527	15,228	997	1,469	2,515	1,705	3,010	
Rental of Equipment	14	39,180	23,026	9,869	646	952	1,630	1,105	1,951	
Transportation Expense	14	118,628	69,718	29,882	1,957	2,883	4,935	3,345	5,908	
Insurance - General Liability	14	4,935	2,900	1,243	81	120	205	139	246	
Insurance -Workman's Compensation	14	110,717	65,068	27,890	1,827	2,690	4,606	3,122	5,514	
Advertising	14	3,674	2,159	926	61	89	153	104	183	
Rate Case Expense - Amort	18	189,000	93,328	48,611	3,213	4,290	7,995	10,187	21,376	
Regulatory Commission Expense	18	270,077	133,364	69,464	4,591	6,131	11,424	14,557	30,546	
Fringe Benefits	16	(2,834,345)	(1,611,325)	(739,480)	(49,034)	(71,425)	(123,294)	(83,046)	(156,739)	
Miscellaneous Other	16	48,767	27,724	12,723	844	1,229	2,121	1,429	2,697	
Membership Dues	14	0	0	0	0	0	0	0	0	
Reg Fees for Conventions	14	0	0	0	0	0	0	0	0	
Communication Services	14	0	0	0	0	0	0	0	0	
Office Expenses and Utilities	14	482,593	283,620	121,565	7,963	11,727	20,076	13,609	24,033	
Uniforms, Materials and Supplies and Other	14	81,002	47,605	20,404	1,337	1,968	3,370	2,284	4,034	
Postage	14	0	0	0	0	0	0	0	0	
Subscriptions	14	0	0	0	0	0	0	0	0	
Travel	14	0	0	0	0	0	0	0	0	
TOTAL A & G EXPENSE		7,902,760	4,689,414	1,929,374	124,775	181,574	314,935	239,938	422,750	
Total Operation & Maintenance Expenses		19,259,294	11,218,005	5,004,714	331,117	510,365	841,068	489,365	864,659	
DEPRECIATION EXPENSE										
Water Source Structures	2	82,824	44,245	27,332	2,004	3,744	5,052	157	290	
Collection and Impounding Reservoirs	1	7,983	4,268	2,637	186	348	488	20	37	
Lakes, River and Other Intakes	2	214,637	114,659	70,830	5,194	9,702	13,093	408	751	
Wells & Springs	2	18,004	9,618	5,941	436	814	1,098	34	63	
Infiltration Galleries and Tunnels	2	400	214	132	10	18	24	1	1	
Purification Buildings	2	472,455	252,385	155,910	11,433	21,355	28,820	898	1,654	
Power Generation Equip	3	0	0	0	0	0	0	0	0	
Electric Pumping Equipment	3	597,839	251,451	155,378	11,359	21,283	28,696	45,555	84,116	
Oil Engine Pumping Equipment	2	3,833	2,048	1,265	93	173	234	7	13	
Purification System - Treatment Structures	2	868,536	463,972	286,617	21,019	39,258	52,981	1,650	3,040	
Purification System - Painting	2	39,209	20,945	12,939	949	1,772	2,392	74	137	
Purification System - Chemical Treatment	2	598,011	319,457	197,344	14,472	27,030	36,479	1,136	2,093	
Laboratory Equipment	2	4,514	2,411	1,490	109	204	275	9	16	
T&D Structures and Improvements	6	12,150	4,171	3,448	239	96	567	1,275	2,353	
Distribution Reservoirs and Standpipes	5	396,205	135,542	122,824	8,360	11,490	19,573	34,589	63,829	
Distribution Mains	4	1,204,094	386,875	349,910	23,961	0	55,870	136,063	251,415	
Transmission Mains	3	1,081,270	454,782	281,022	20,544	38,493	51,901	82,393	152,135	
Services	9	720,889	621,623	70,287	865	72	3,460	24,582	0	

SUEZ WATER PENNSYLVANIA INC.

COST OF SERVICE FOR THE TWELVE MONTHS ENDED DECEMBER 31, 2019, ALLOCATED TO CUSTOMER CLASSIFICATIONS

Account (1)	Factor Ref. (2)	Cost of Service (3)	Customer Classifications				Fire Protection		
			Residential (4)	Commercial (5)	Industrial (6)	Large Industrial (7)	Public Authorities (8)	Private (9)	Public (10)
Meters	8	976,632	731,693	226,286	4,590	781	13,282	0	0
Hydrants	7	128,185	0	0	0	0	0	0	128,185
General Land and Land Rights	14	6,374	3,746	1,606	105	155	265	180	317
Office Buildings	14	239,971	141,031	60,449	3,960	5,831	9,983	6,767	11,951
Stores, Shop and Garage Buildings	14	178,839	105,104	45,050	2,951	4,346	7,440	5,043	8,906
Miscellaneous Structures and Improvements	14	17,015	10,000	4,286	281	413	708	480	847
Other Plant and Miscellaneous Equipment	14	8,424	4,951	2,122	139	205	350	238	420
Office Furniture and Equipment	14	33,217	19,522	8,367	548	807	1,382	937	1,654
Computer Software	14	80,761	47,463	20,344	1,333	1,962	3,360	2,277	4,022
Computer Software-CIS Implementation	12	5,653	5,049	451	4	0	21	125	3
Transportation Equipment	14	215	126	54	4	5	9	6	11
Stores Equipment	14	0	0	0	0	0	0	0	0
Tools and work Equipment	14	48,767	28,660	12,284	805	1,185	2,029	1,375	2,429
Shop Equipment	14	109,759	64,505	27,648	1,811	2,667	4,566	3,095	5,466
Power Operated Equipment	14	0	0	0	0	0	0	0	0
Communication Equipment	14	555,964	326,740	140,047	9,173	13,510	23,128	15,678	27,687
Miscellaneous Equipment	14	10,332	6,072	2,603	170	251	430	291	515
Total Depreciation Expense		8,722,962	4,583,328	2,296,901	147,107	207,971	367,956	365,344	754,355
Amortization of Acquisition Adjustment	18	57,744	28,514	14,852	982	1,311	2,443	3,112	6,531
Amortization of Regulatory Liability	18	(265,198)	(130,955)	(68,209)	(4,508)	(6,020)	(11,218)	(14,294)	(29,994)
Taxes Other Than Income									
Real Estate	18	318,178	157,116	81,835	5,409	7,223	13,459	17,150	35,986
Payroll Taxes	16	650,213	369,646	169,641	11,249	16,385	28,284	19,051	35,957
Total Taxes, Other Than Income		968,391	526,763	251,476	16,658	23,608	41,743	36,201	71,943
Income Taxes	18	5,519,128	2,725,346	1,419,520	93,825	125,284	233,459	297,481	624,213
Utility Income Available for Return	18	19,356,334	9,558,158	4,978,449	329,058	439,389	818,773	1,043,306	2,189,201
Total Cost of Service		53,618,655	28,509,159	13,897,703	914,237	1,301,908	2,294,224	2,220,515	4,480,908
Less: Other Water Revenues	19	405,611	215,623	105,134	6,936	9,856	17,360	16,833	33,950
Total Cost of Service Related to Sales of Water		53,213,044	28,293,536	13,792,569	907,301	1,292,052	2,276,864	2,203,682	4,446,959
Reallocation of Public Fire	20	0	2,575,797	796,599	16,159	2,750	46,758	0	(3,438,063)
Total		\$ 53,213,044	\$ 30,869,334	\$ 14,589,168	\$ 923,460	\$ 1,294,802	\$ 2,323,622	\$ 2,203,682	\$ 1,008,895

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SUEZ WATER PENNSYLVANIA INC.

FACTORS FOR ALLOCATING COST OF SERVICE TO CUSTOMER CLASSIFICATIONS

FACTOR 1. ALLOCATION OF COSTS WHICH VARY WITH THE AMOUNT OF WATER CONSUMED.

Factors are based on the pro forma test year average daily consumption for each customer classification.

Customer Classification <u>(1)</u>	Average Daily Consumption, Thousand Gallons <u>(2)</u>	Allocation Factor <u>(3)</u>
Residential	6,360	0.5346
Commercial	3,930	0.3303
Industrial	277	0.0233
Large Industrial	519	0.0436
Public Authority	727	0.0611
Private Fire Protection	30	0.0025
Public Fire Protection	55	0.0046
Total	<u>11,898</u>	<u>1.0000</u>

FACTOR 2. ALLOCATION OF COSTS ASSOCIATED WITH FACILITIES SERVING BASE AND MAXIMUM DAY EXTRA CAPACITY FUNCTIONS.

Factors are based on the weighting of the factors for average daily consumption (Factor 1) and the factors derived from maximum day extra capacity demand for each customer classification, as follows:

Customer Classification <u>(1)</u>	Average Daily Consumption		Maximum Day Extra Capacity		Allocation Factor <u>(6)=(3)+(5)</u>
	Allocation Factor 1 <u>(2)</u>	Weighted Factor <u>(3)=(2)x</u>	Allocation Factor <u>(4)</u>	Weighted Factor <u>(5)=(4)x</u>	
		0.7692		0.2308	
Residential	0.5346	0.4113	0.5325	0.1229	0.5342
Commercial	0.3303	0.2541	0.3290	0.0759	0.3300
Industrial	0.0233	0.0179	0.0271	0.0063	0.0242
Large Industrial	0.0436	0.0335	0.0506	0.0117	0.0452
Public Authority	0.0611	0.0470	0.0608	0.0140	0.0610
Private Fire Protection	0.0025	0.0019			0.0019
Public Fire Protection	0.0046	0.0035			0.0035
Total	<u>1.0000</u>	<u>0.7692</u>	<u>1.0000</u>	<u>0.2308</u>	<u>1.0000</u>

The derivation of the maximum day extra capacity factors in column 4 and the basis for the column 3 and 5 weightings are presented on the following page.

SUEZ WATER PENNSYLVANIA INC.

FACTORS FOR ALLOCATING COST OF SERVICE TO CUSTOMER CLASSIFICATIONS, cont.

FACTOR 2. ALLOCATION OF COSTS ASSOCIATED WITH FACILITIES SERVING BASE AND
MAXIMUM DAY EXTRA CAPACITY FUNCTIONS, cont.

Customer Classification	Average Daily Consumption, Thousand Gal.	Maximum Day Extra Capacity		
		Factor*	Rate of Flow, Thousand Gal. Per Day	Allocation Factor
(1)	(2)	(3)	(4)=(2)x(3)	(5)
Residential	6,360	0.6	3,816	0.5325
Commercial	3,930	0.6	2,358	0.3290
Industrial	277	0.7	194	0.0271
Large Industrial	519	0.7	363	0.0506
Public Authority	727	0.6	436	0.0608
Total	11,813		7,167	1.0000

The weighting of the factors is based on the maximum day ratio of 1.30, based on a review of maximum day ratios experienced during the period 2000 through 2017 (see Schedule F).

	Maximum Day Ratio	Weight
Average Day	1.00	0.7692
Maximum Day Extra Capacity	0.30	0.2308
Total	1.30	1.0000

* Ratio of maximum day to average day minus 1.0.

SUEZ WATER PENNSYLVANIA INC.

FACTORS FOR ALLOCATING COST OF SERVICE TO CUSTOMER CLASSIFICATIONS, cont.

FACTOR 3. ALLOCATION OF COSTS ASSOCIATED WITH FACILITIES SERVING BASE, MAXIMUM DAY EXTRA CAPACITY AND FIRE PROTECTION FUNCTIONS.

Factors are based on the weighting of the average daily consumption, the maximum day extra capacity demand, and the fire protection demand for each customer classification.

Customer Classification	Average Daily Consumption		Maximum Day Extra Capacity		Fire Protection		Allocation Factor
	Allocation Factor	Weighted Factor	Allocation Factor	Weighted Factor	Allocation Factor	Weighted Factor	
(1)	(2)	(3)=(2) X	(4)	(5)=(4) X	(6)	(7)=(6) X	(8)=(3)+(5)+(7)
		0.6057		0.1817		0.2126	
Residential	0.5346	0.3238	0.5325	0.0968			0.4206
Commercial	0.3303	0.2001	0.3290	0.0598			0.2599
Industrial	0.0233	0.0141	0.0271	0.0049			0.0190
Large Industrial	0.0436	0.0264	0.0506	0.0092			0.0356
Public Authority	0.0611	0.0370	0.0608	0.0110			0.0480
Private Fire Protection	0.0025	0.0015			0.3512	0.0747	0.0762
Public Fire Protection	0.0046	0.0028			0.6488	0.1379	0.1407
Total	1.0000	0.6057	1.0000	0.1817	1.0000	0.2126	1.0000

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SUEZ WATER PENNSYLVANIA INC.

FACTORS FOR ALLOCATING COST OF SERVICE TO CUSTOMER CLASSIFICATIONS, cont.

FACTOR 3. ALLOCATION OF COSTS ASSOCIATED WITH FACILITIES SERVING BASE, MAXIMUM DAY EXTRA CAPACITY AND FIRE PROTECTION FUNCTIONS, cont.

The weighting of the factors is based on the potential demand of general and fire protection service. The bases for the potential demand of general service are the maximum day ratio of 1.30 and the average daily system sendout for 2017 of 17.093 MGD. The system demand for fire protection is 10,000 Gallons per minute for 10 hours.

	<u>Ratio</u>	<u>Rate of Flow, (GPD)</u>	<u>Weight</u>
Average Day	1.00	17,093,435	0.6057
Maximum Day Extra Capacity	<u>0.30</u>	<u>5,128,030</u>	<u>0.1817</u>
Subtotal	<u>1.30</u>	22,221,465	0.7874
Fire Protection		<u>6,000,000</u>	<u>0.2126</u>
Total		<u>28,221,465</u>	<u>1.0000</u>

The public and private fire protection allocation factors in column 6 on the previous page are based on the relative potential demands (see Schedule G).

SUEZ WATER PENNSYLVANIA INC.

FACTORS FOR ALLOCATING COST OF SERVICE TO CUSTOMER CLASSIFICATIONS, cont.

FACTOR 4. ALLOCATION OF COSTS ASSOCIATED WITH FACILITIES SERVING BASE AND MAXIMUM HOUR EXTRA CAPACITY FUNCTIONS.

Factors are based on the weighting of the average daily consumption, the maximum day extra capacity demand, and the fire protection demand for each customer classification.

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Customer Classification	Average Hourly Consumption			Maximum Hour Extra Capacity		Fire Protection		Allocation Factor
	Thousand Gallons	Allocation Factor	Weighted Factor	Allocation Factor	Weighted Factor	Allocation Factor	Weighted Factor	
(1)	(2)	(3)	(4)=(3) X 0.3784	(5)	(6)=(5) X 0.3027	(7)	(8)=(7) X 0.3189	(9)=(4)+(6)+(8)
Residential	265.0	0.5588	0.2114	0.3632	0.1099			0.3213
Commercial	163.8	0.3454	0.1307	0.5283	0.1599			0.2906
Industrial	11.5	0.0243	0.0092	0.0352	0.0107			0.0199
Public Authority	30.3	0.0639	0.0242	0.0733	0.0222			0.0464
Private Fire Protection	1.3	0.0027	0.0010			0.3512	0.1120	0.1130
Public Fire Protection	2.3	0.0049	0.0019			0.6488	0.2069	0.2088
Total	474.2	1.0000	0.3784	1.0000	0.3027	1.0000	0.3189	1.0000

The maximum hour extra capacity factors in column 5 are determined on the following page.

SUEZ WATER PENNSYLVANIA INC.

FACTORS FOR ALLOCATING COST OF SERVICE TO CUSTOMER CLASSIFICATIONS, cont.

FACTOR 4. ALLOCATION OF COSTS ASSOCIATED WITH FACILITIES SERVING BASE AND
MAXIMUM HOUR EXTRA CAPACITY FUNCTIONS, cont.

The weighting of the factors is based on the potential demand of general and fire protection service. The bases for the potential demand of general service are the maximum hour ratio of 1.80 and the average daily system sendout for 2017 of 17.093 MGD. The system demand for fire protection is 10,000 gallons per minute

	Ratio	Rate of Flow, (GPM)	Weight
Average Hour	1.00	11,870	0.3784
Maximum Hour Extra Capacity	<u>0.80</u>	<u>9,496</u>	<u>0.3027</u>
Subtotal	<u><u>1.80</u></u>	21,366	0.6811
Fire Protection		<u>10,000</u>	<u>0.3189</u>
Total		<u><u>31,366</u></u>	<u><u>1.0000</u></u>

The maximum hour extra capacity factors in column 5 of the previous page are determined as follows:

Customer Classification	Average Hourly Consumption Thousand Gal.	Maximum Hour Extra Capacity		
		Factor*	1,000 Gallons Per Hour	Allocation Factor
(1)	(2)	(3)	(4)=(2)x(3)	(5)
Residential	265.0	1.7	450.5	0.3632
Commercial	163.8	4.0	655.2	0.5283
Industrial	11.5	3.8	43.7	0.0352
Public Authority	<u>30.3</u>	3.0	<u>90.9</u>	<u>0.0733</u>
Total	<u><u>470.6</u></u>		<u><u>1,240.3</u></u>	<u><u>1.0000</u></u>

* Ratio of Maximum Hour To Average Hour Minus 1.0.

The public and private fire protection allocation factors in column 7 on the previous page are based on the relative potential demands (see Schedule G).

SUEZ WATER PENNSYLVANIA INC.

FACTORS FOR ALLOCATING COST OF SERVICE TO CUSTOMER CLASSIFICATIONS, cont.

FACTOR 5. ALLOCATION OF COSTS ASSOCIATED WITH STORAGE FACILITIES.

Factors are based on the weighting of the average hourly consumption, the maximum hour extra capacity demand, and the fire protection demand for each customer classification.

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Customer Classification	Average Hourly Consumption			Maximum Hour Extra Capacity		Fire Protection		Allocation Factor
	Thousand Gallons	Allocation Factor	Weighted Factor	Allocation Factor	Weighted Factor	Allocation Factor	Weighted Factor	
(1)	(2)	(3)	(4)=(3) X 0.4192	(5)	(6)=(5) X 0.3354	(7)	(8)=(7) X 0.2454	(9)=(4)+(6)+(8)
Residential	265.0	0.5345	0.2241	0.3517	0.1180			0.3421
Commercial	163.8	0.3304	0.1385	0.5114	0.1715			0.3100
Industrial	11.5	0.0232	0.0097	0.0341	0.0114			0.0211
Large Industrial	21.6	0.0436	0.0183	0.0320	0.0107			0.0290
Public Authority	30.3	0.0611	0.0256	0.0709	0.0238			0.0494
Private Fire Protection	1.3	0.0026	0.0011			0.3512	0.0862	0.0873
Public Fire Protection	2.3	0.0046	0.0019			0.6488	0.1592	0.1611
Total	495.8	1.0000	0.4192	1.0001	0.3354	1.0000	0.2454	1.0000

The weighting of the factors is based on the ratio of the capacity required for a 10 hour demand of fire flow, as related to total storage capacity. The calculation is shown on the following page.

SUEZ WATER PENNSYLVANIA INC.

FACTORS FOR ALLOCATING COST OF SERVICE TO CUSTOMER CLASSIFICATIONS, cont.

FACTOR 5. ALLOCATION OF COSTS ASSOCIATED WITH STORAGE FACILITIES, cont.

The weighting of the factors is based on the ratio of the capacity required for a 10 hour demand of fire flow, as related to total storage capacity.

Fire not updated.

$$\text{Fire Protection Weight} = \frac{10,000 \text{ GPM} \times 60 \text{ Min.} \times 10 \text{ Hrs.}}{24,449,000 \text{ Gallons}} = 0.2454$$

$$\text{General Service Weight} = 1.0000 - 0.2454 = 0.7546$$

The weighting of the average hourly consumption and maximum hour extra demand for general service is based on the maximum hour ratio, as follows:

	Maximum Hour Ratio	Percent	Weight
Average Hour	1.00	55.56	0.4192
Extra Capacity Maximum Hour	0.80	44.44	0.3354
Total	<u>1.80</u>	<u>100.00</u>	<u>0.7546</u>

Customer Classification	Average Hourly Consumption Thousand Gal.	Factor*	Maximum Hour Extra Capacity	
			1,000 Gallons Per Hour	Allocation Factor
(1)	(2)	(3)	(4)=(2)x(3)	(5)
Residential	265.0	1.7	450.5	0.3517
Commercial	163.8	4.0	655.2	0.5114
Industrial	11.5	3.8	43.7	0.0341
Large Industrial	21.6	1.9	41.0	0.0320
Public Authority	30.3	3.0	90.9	0.0709
Total	<u>492.2</u>		<u>1281.3</u>	<u>1.0001</u>

* Ratio of Maximum Hour To Average Hour Minus 1.0.

SUEZ WATER PENNSYLVANIA INC.

FACTORS FOR ALLOCATING COST OF SERVICE TO CUSTOMER CLASSIFICATIONS, cont.

FACTOR 6. ALLOCATION OF COSTS ASSOCIATED WITH TRANSMISSION AND DISTRIBUTION MAINS.

Factors are based on the weighting of the maximum daily consumption with fire, Factor 3, and the maximum hour

Customer Classification	Maximum Daily Consumption w/ Fire		Maximum Hourly Consumption		Allocation Factor
	Allocation Factor 3	Weighted Factor	Allocation Factor 4	Weighted Factor	
(1)	(2)	(3)=(2)X	(4)	(5)=(4)X	(6)=(3)+(5)
		0.2216		0.7784	
Residential	0.4206	0.0932	0.3213	0.2501	0.3433
Commercial	0.2599	0.0576	0.2906	0.2262	0.2838
Industrial	0.0190	0.0042	0.0199	0.0155	0.0197
Large Industrial	0.0356	0.0079	0.0000	0.0000	0.0079
Public Authority	0.0480	0.0106	0.0464	0.0361	0.0467
Private Fire Protection	0.0762	0.0169	0.1130	0.0880	0.1049
Public Fire Protection	0.1407	0.0312	0.2088	0.1625	0.1937
Total	1.0000	0.2216	1.0000	0.7784	1.0000

The weighting of the factors is based on the total footage of mains, designated as either transmission mains or distribution mains, as follows:

	Total Footage of Mains	Weight
Transmission Mains	1,058,994	0.2216
Distribution Mains	3,719,194	0.7784
Total	4,778,188	1.0000

SUEZ WATER PENNSYLVANIA INC.

FACTORS FOR ALLOCATING COST OF SERVICE TO CUSTOMER CLASSIFICATIONS, cont.

FACTOR 7. ALLOCATION OF COSTS ASSOCIATED WITH FIRE HYDRANTS.

Costs are assigned directly to Public Fire Protection.

<u>Customer Classification</u> (1)	<u>Allocation Factor</u> (3)
Public Fire Protection	<u>1.0000</u>
Total	<u><u>1.0000</u></u>

FACTOR 8. ALLOCATION OF COSTS ASSOCIATED WITH METERS.

Factors are based on the relative cost of meters by size and customer classification, as developed on the following page and summarized below.

<u>Customer Classification</u> (1)	<u>5/8" Dollar Equivalents</u> (2)	<u>Allocation Factor</u> (3)
Residential	58,270	0.7492
Commercial	18,018	0.2317
Industrial	368	0.0047
Large Industrial	59	0.0008
Public Authority	1,054	0.0136
Private Fire	<u>0</u>	<u>0.0000</u>
Total	<u><u>77,769</u></u>	<u><u>1.0000</u></u>

SUEZ WATER PENNSYLVANIA INC.

BASIS FOR ALLOCATING METER COSTS TO CUSTOMER CLASSIFICATIONS

Meter Size (1)	5/8" Dollar Equivalent (2)	Residential		Commercial		Industrial		Large Industrial		Public Authority		Total	
		Number of Meters (3)	Weighting (4)=(2)X(3)	Number of Meters (5)	Weighting (6)=(2)X(5)	Number of Meters (7)	Weighting (8)=(2)X(7)	Number of Meters (9)	Weighting (10)=(2)X(9)	Number of Meters (11)	Weighting (12)=(2)X(11)	Number of Meters (13)	Weighting (14)
5/8 and 3/4	1.0	56,354	56,354	2,784	2,784	9	9	0	0	86	86	59,233	59,233
1	1.6	266	426	47	75	1	2	0	0	41	66	355	569
1-1/2	4.9	274	1,343	1,162	5,694	11	54	0	0	27	132	1,474	7,223
2	6.0	17	102	518	3,108	3	18	0	0	61	366	599	3,594
3	9.0	5	45	474	4,266	11	99	0	0	13	117	503	4,527
4	13.5	0	0	28	378	8	108	1	14	4	54	41	554
6	22.4	0	0	34	762	2	45	2	45	8	179	46	1,031
8	32.8	0	0	29	951	1	33	0	0	0	0	30	984
10	54.4	0	0	0	0	0	0	0	0	1	54	1	54
Total		<u>56,916</u>	<u>58,270</u>	<u>5,076</u>	<u>18,018</u>	<u>46</u>	<u>368</u>	<u>3</u>	<u>59</u>	<u>241</u>	<u>1,054</u>	<u>62,282</u>	<u>77,769</u>

SUEZ WATER PENNSYLVANIA INC.

FACTORS FOR ALLOCATING COST OF SERVICE TO CUSTOMER CLASSIFICATIONS, cont.

FACTOR 9. ALLOCATION OF COSTS ASSOCIATED WITH SERVICES.

Factors are based on the relative cost of services by size and customer classification, as developed on the following page and summarized below.

<u>Customer Classification</u> (1)	<u>3/4" Dollar Equivalents</u> (2)	<u>Allocation Factor</u> (3)
Residential	57,109	0.8623
Commercial	6,457	0.0975
Industrial	79	0.0012
Large Industrial	8	0.0001
Public Authority	319	0.0048
Private Fire Protection	<u>2,257</u>	<u>0.0341</u>
Total	<u><u>66,229</u></u>	<u><u>1.0000</u></u>

SUEZ WATER PENNSYLVANIA INC.

BASIS FOR ALLOCATING SERVICE COSTS TO CUSTOMER CLASSIFICATIONS

Service Size	3/4" Dollar Equivalent	Residential		Commercial		Industrial		Large Industrial		Public Authority		Private Fire Protection		Total	
		Number of Services	Weighting (4)=(2)X(3)	Number of Services	Weighting (6)=(2)X(5)	Number of Services	Weighting (8)=(2)X(7)	Number of Services	Weighting (10)=(2)X(9)	Number of Services	Weighting (12)=(2)X(11)	Number of Services	Weighting (14)=(2)X(11)	Number of Services	Weighting (16)
(1)	(2)	(3)	(4)=(2)X(3)	(5)	(6)=(2)X(5)	(7)	(8)=(2)X(7)	(9)	(10)=(2)X(9)	(11)	(12)=(2)X(11)	(13)	(14)=(2)X(11)	(15)	(16)
3/4	1.00	56,354	56,354	2,784	2,784	9	9	0	0	86	86	0	0	59,233	59,233
1	1.28	266	340	47	60	1	1	0	0	41	52	0	0	355	453
1-1/2	1.39	274	380	1,162	1,613	11	15	0	0	27	37	0	0	1,474	2,045
2	1.39	17	24	518	719	3	4	0	0	61	85	74	103	673	935
3	2.18	5	11	474	1,035	11	24	0	0	13	28	5	11	508	1,109
4	2.18	0	0	28	61	8	17	1	2	4	9	185	404	226	493
6	2.79	0	0	34	95	2	6	2	6	8	22	317	884	363	1,013
8	3.11	0	0	29	90	1	3	0	0	0	0	220	684	250	777
10	4.12	0	0	0	0	0	0	0	0	1	0	30	124	31	124
12	4.65	0	0	0	0	0	0	0	0	0	0	10	47	10	47
Total		<u>56,916</u>	<u>57,109</u>	<u>5,076</u>	<u>6,457</u>	<u>46</u>	<u>79</u>	<u>3</u>	<u>8</u>	<u>241</u>	<u>319</u>	<u>841</u>	<u>2,257</u>	<u>63,123</u>	<u>66,229</u>

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SUEZ WATER PENNSYLVANIA INC.

FACTORS FOR ALLOCATING COST OF SERVICE TO CUSTOMER CLASSIFICATIONS, cont.

FACTOR 10. ALLOCATION OF TRANSMISSION AND DISTRIBUTION OPERATION SUPERVISION AND ENGINEERING AND MISCELLANEOUS EXPENSES.

Factors are based on transmission and distribution operation expenses other than those being allocated, as follows:

<u>Customer Classification</u>	<u>Transmission & Distribution Operating Expenses</u>	<u>Allocation Factor</u>
(1)	(2)	(3)
Residential	\$ 276,297	0.4337
Commercial	173,427	0.2722
Industrial	10,424	0.0164
Large Industrial	4,026	0.0063
Public Authority	25,059	0.0393
Private Fire Protection	51,956	0.0815
Public Fire Protection	<u>95,938</u>	<u>0.1506</u>
Total	<u><u>637,127</u></u>	<u><u>1.0000</u></u>

FACTOR 11. ALLOCATION OF TRANSMISSION AND DISTRIBUTION MAINTENANCE SUPERVISION AND ENGINEERING, STRUCTURES AND IMPROVEMENTS, AND OTHER EXPENSES.

Factors are based on transmission and distribution maintenance expenses other than those being allocated, as follows:

<u>Customer Classification</u>	<u>Transmission & Distribution Maintenance Expenses</u>	<u>Allocation Factor</u>
(1)	(2)	(3)
Residential	\$ 193,260	0.4072
Commercial	112,359	0.2368
Industrial	7,369	0.0155
Large Industrial	2,980	0.0063
Public Authority	17,617	0.0371
Private Fire Protection	41,309	0.0870
Public Fire Protection	<u>99,691</u>	<u>0.2101</u>
Total	<u><u>\$474,585</u></u>	<u><u>1.0000</u></u>

SUEZ WATER PENNSYLVANIA INC.

FACTORS FOR ALLOCATING COST OF SERVICE TO CUSTOMER CLASSIFICATIONS, cont.

FACTOR 12. ALLOCATION OF BILLING AND COLLECTING COSTS.

Factors are based on the total number of customers.

<u>Customer Classification</u> (1)	<u>Total Customers</u> (2)	<u>Allocation Factor</u> (3)
Residential	56,916	0.8932
Commercial	5,076	0.0797
Industrial	46	0.0007
Large Industrial	3	0.0000
Public Authority	241	0.0038
Private Fire Protection	1,410	0.0221
Public Fire Protection	<u>32</u>	<u>0.0005</u>
 Total	 <u><u>63,724</u></u>	 <u><u>1.0000</u></u>

FACTOR 13. ALLOCATION OF METER READING COSTS.

Factors are based on the number of metered customers.

<u>Customer Classification</u> (1)	<u>Total Metered Customers</u> (2)	<u>Allocation Factor</u> (3)
Residential	56,916	0.9139
Commercial	5,076	0.0815
Industrial	46	0.0007
Large Industrial	3	0.0000
Public Authority	<u>241</u>	<u>0.0039</u>
 Total	 <u><u>62,282</u></u>	 <u><u>1.0000</u></u>

SUEZ WATER PENNSYLVANIA INC.

FACTORS FOR ALLOCATING COST OF SERVICE TO CUSTOMER CLASSIFICATIONS, cont.

FACTOR 14. ALLOCATION OF ADMINISTRATIVE AND GENERAL EXPENSES

Factors are based on the allocation of all other operation and maintenance expenses excluding purchased water, power, chemicals and waste disposal.

<u>Customer Classification</u> (1)	<u>Operation & Maintenance Expenses</u> (2)	<u>Allocation Factor</u> (3)
Residential	\$5,063,240	0.5877
Commercial	2,169,980	0.2519
Industrial	142,476	0.0165
Large Industrial	209,282	0.0243
Public Authority	358,657	0.0416
Private Fire Protection	242,574	0.0282
Public Fire Protection	<u>429,300</u>	<u>0.0498</u>
 Total	 <u>\$8,615,510</u>	 <u>1.0000</u>

FACTOR 15. ALLOCATION OF ADMINISTRATIVE AND CASH WORKING CAPITAL

Factors are based on the allocation of all operation and maintenance expenses including purchased water, power, chemicals and waste disposal.

<u>Customer Classification</u> (1)	<u>Operation & Maintenance Expenses</u> (2)	<u>Allocation Factor</u> (3)
Residential	\$10,847,214	0.5860
Commercial	4,811,584	0.2600
Industrial	318,352	0.0172
Large Industrial	493,319	0.0267
Public Authority	809,306	0.0437
Private Fire Protection	448,892	0.0243
Public Fire Protection	<u>779,733</u>	<u>0.0421</u>
 Total	 <u>\$18,508,400</u>	 <u>1.0000</u>

SUEZ WATER PENNSYLVANIA INC.

FACTORS FOR ALLOCATING COST OF SERVICE TO CUSTOMER CLASSIFICATIONS, cont.

FACTOR 16. ALLOCATION OF LABOR RELATED TAXES AND BENEFITS.

Factors are based on the allocation of direct labor expense.

<u>Customer Classification</u> (1)	<u>Direct Labor Expense</u> (2)	<u>Allocation Factor</u> (3)
Residential	\$3,103,130	0.5685
Commercial	1,424,200	0.2609
Industrial	94,685	0.0173
Large Industrial	137,539	0.0252
Public Authority	237,657	0.0435
Private Fire Protection	160,070	0.0293
Public Fire Protection	301,661	0.0553
Total	<u>\$5,458,942</u>	<u>1.0000</u>

FACTOR 17. ALLOCATION OF ORGANIZATION, FRANCHISES AND CONSENTS,
MISCELLANEOUS INTANGIBLE PLANT AND OTHER RATE BASE ELEMENTS.

Factors are based on the allocation of the original cost less depreciation other than those items being allocated, as follows:

<u>Customer Classification</u> (1)	<u>Original Cost Less Depreciation</u> (2)	<u>Allocation Factor</u> (3)
Residential	\$128,705,508	0.4933
Commercial	67,118,419	0.2572
Industrial	4,436,649	0.0170
Large Industrial	5,926,718	0.0227
Public Authority	11,034,445	0.0423
Private Fire Protection	14,101,877	0.0540
Public Fire Protection	29,612,155	0.1135
Total	<u>\$260,935,770</u>	<u>1.0000</u>

SUEZ WATER PENNSYLVANIA INC.

FACTORS FOR ALLOCATING COST OF SERVICE TO CUSTOMER CLASSIFICATIONS, cont.

FACTOR 18. ALLOCATION OF INCOME TAXES AND INCOME AVAILABLE FOR RETURN.

Factors are based on the allocation of the original cost measure of value rate base as shown on the following pages and summarized below.

<u>Customer Classification</u> (1)	<u>Original Cost Measure of Value</u> (2)	<u>Allocation Factor</u> (3)
Residential	\$120,204,747	0.4938
Commercial	62,620,652	0.2572
Industrial	4,139,303	0.0170
Large Industrial	5,533,990	0.0227
Public Authority	10,295,620	0.0423
Private Fire Protection	13,119,505	0.0539
Public Fire Protection	<u>27,535,042</u>	<u>0.1131</u>
Total	<u>\$243,448,860</u>	<u>1.0000</u>

FACTOR 19. ALLOCATION OF REGULATORY COMMISSION EXPENSES, ASSESSMENTS A
OTHER WATER REVENUES.

The factors are based on the allocation of the total cost of service, excluding those items being allocated.

<u>Customer Classification</u> (1)	<u>Total Cost of Service</u> (2)	<u>Allocation Factor</u> (3)
Residential	\$28,611,600	0.5316
Commercial	13,951,060	0.2592
Industrial	917,764	0.0171
Large Industrial	1,306,617	0.0243
Public Authority	2,302,999	0.0428
Private Fire Protection	2,231,697	0.0415
Public Fire Protection	<u>4,504,371</u>	<u>0.0837</u>
Total	<u>\$53,826,109</u>	<u>1.0002</u>

SUEZ WATER PENNSYLVANIA INC.

COST OF SERVICE FOR THE TWELVE MONTHS ENDED DECEMBER 31, 2019, ALLOCATED TO CUSTOMER CLASSIFICATIONS

not updated Account (1)	Factor Ref (2)	Cost of Service (3)	Residential				Large Industrial		Public Authorities	Fire Protection	
			(4)	Commercial (5)	Industrial (6)	(7)	(8)	Private (9)	Public (10)		
RATE BASE											
Organization	17	\$ (85,780)	\$ (42,315)	\$ (22,063)	\$ (1,458)	\$ (1,947)	\$ (3,628)	\$ (4,632)	\$ (9,736)		
Franchises and Consents	17	64,266	31,702	16,529	1,093	1,459	2,718	3,470	7,294		
Source of Supply - Land and Land Rights	2	469,867	251,003	155,056	11,371	21,238	28,662	893	1,645		
Water Source Structures	2	2,327,346	1,243,268	768,024	56,322	105,196	141,968	4,422	8,146		
Collection and Impounding Reservoirs	1	318,763	170,411	105,288	7,427	13,898	19,476	797	1,466		
Lakes, River and Other Intakes	2	5,328,927	2,846,713	1,758,546	128,960	240,868	325,065	10,125	18,651		
Wells & Springs	2	482,753	257,887	159,308	11,683	21,820	29,448	917	1,690		
Infiltration Galleries and Tunnels	2	10,501	5,610	3,465	254	475	641	20	37		
Water Treatment - Land and Land Rights	2	1,234,766	659,612	407,473	29,881	55,811	75,321	2,346	4,322		
Purification Buildings	2	14,392,820	7,688,645	4,749,631	348,306	650,555	877,962	27,346	50,375		
Power Generation Equip	3	-	-	-	-	-	-	-	-		
Electric Pumping Equipment	3	10,681,671	4,492,711	2,776,166	202,952	380,267	512,720	813,943	1,502,911		
Oil Engine Pumping Equipment	2	59,336	31,697	19,581	1,436	2,682	3,619	113	208		
Purification System - Treatment Structures	2	23,361,387	12,479,653	7,709,258	565,346	1,055,935	1,425,045	44,387	81,765		
Purification System - Painting	2	184,863	98,754	61,005	4,474	8,356	11,277	351	647		
Purification System - Chemical Treatment	2	7,238,782	3,866,957	2,388,798	175,179	327,193	441,566	13,754	25,336		
Laboratory Equipment	2	34,224	18,282	11,294	828	1,547	2,088	65	120		
T&D - Land and Land Rights	6	1,893,254	649,954	537,306	37,297	14,957	88,415	198,602	366,723		
T&D Structures and Improvements	6	388,263	133,291	110,189	7,649	3,067	18,132	40,729	75,207		
Distribution Reservoirs and Standpipes	5	9,566,933	3,272,848	2,965,749	201,862	277,441	472,606	835,193	1,541,233		
Distribution Mains	4	50,938,186	16,366,439	14,802,637	1,013,670	-	2,363,532	5,756,015	10,635,893		
Transmission Mains	3	62,948,574	26,476,170	16,360,334	1,196,023	2,240,969	3,021,532	4,796,681	8,856,864		
Services	9	28,929,900	24,946,253	2,820,665	34,716	2,893	138,864	986,510	-		
Meters	8	14,543,019	10,895,630	3,369,618	68,352	11,634	197,785	-	-		
Hydrants	7	5,434,893	0	0	0	0	0	0	5,434,893		
Other Plant and Miscellaneous Equipment	14	151,899	89,271	38,263	2,506	3,691	6,319	4,284	7,565		
General Land and Land Rights	14	961,927	565,324	242,309	15,872	23,375	40,016	27,126	47,904		
Office Buildings	14	9,238,720	5,429,596	2,327,234	152,439	224,501	384,331	260,532	460,088		
Stores, Shop and Garage Buildings	14	3,711,277	2,181,117	934,871	61,236	90,184	154,389	104,658	184,822		
Miscellaneous Structures and Improvements	14	169,011	99,328	42,574	2,789	4,107	7,031	4,766	8,417		
Office Furniture and Equipment	14	355,574	208,971	89,569	5,867	8,640	14,792	10,027	17,708		
Computer Software	14	95,772	56,285	24,125	1,580	2,327	3,984	2,701	4,769		
Computer Software-CIS Implementation	12	5,653	5,049	451	4	0	21	125	3		
Transportation Equipment	14	528	311	133	9	13	22	15	26		
Stores Equipment	14	-	0	0	0	0	0	0	0		
Tools and work Equipment	14	737,438	433,392	185,761	12,168	17,920	30,677	20,796	36,724		
Shop Equipment	14	1,411,787	829,707	355,629	23,294	34,306	58,730	39,812	70,307		
Power Operated Equipment	14	-	0	0	0	0	0	0	0		
Communication Equipment	14	3,219,677	1,892,204	811,037	53,125	78,238	133,939	90,795	160,340		
Miscellaneous Equipment	14	107,479	63,165	27,074	1,773	2,612	4,471	3,031	5,352		
Plant Held for Future Use	2	-	0	0	0	0	0	0	0		
Total Utility Plant in Service		260,914,256	128,694,895	67,112,886	4,436,283	5,926,229	11,033,535	14,100,715	29,609,714		

Other Rate Base Items

SUEZ WATER PENNSYLVANIA INC.

COST OF SERVICE FOR THE TWELVE MONTHS ENDED DECEMBER 31, 2019, ALLOCATED TO CUSTOMER CLASSIFICATIONS

not updated Account (1)	Factor Ref (2)	Cost of Service (3)	Fire Protection						
			Residential (4)	Commercial (5)	Industrial (6)	Large Industrial (7)	Public Authorities (8)	Private (9)	Public (10)
Add:									
Cash Working Capital	15	863,746	506,155	224,574	14,856	23,062	37,746	20,989	36,364
Materials and Supplies	14	481,594	283,032	121,313	7,946	11,703	20,034	13,581	23,983
Less:									
Deferred Income Taxes	17	(18,810,736)	(9,279,336)	(4,838,121)	(319,783)	(427,004)	(795,694)	(1,015,780)	(2,135,018)
Total Other Rate Base Elements		(17,465,396)	(8,490,148)	(4,492,234)	(296,980)	(392,239)	(737,914)	(981,210)	(2,074,671)
Total Original Cost Measure of Value		\$ 243,448,860	\$ 120,204,747	\$ 62,620,652	\$ 4,139,303	\$ 5,533,990	\$ 10,295,620	\$ 13,119,505	\$ 27,535,042

SUEZ WATER PENNSYLVANIA INC.

FACTORS FOR ALLOCATING COST OF SERVICE TO CUSTOMER CLASSIFICATIONS, cont.

FACTOR 20. REALLOCATION OF PUBLIC FIRE

Factors are based on the relative cost of meters by size and customer classification.

<u>Customer Classification</u> (1)	<u>5/8" Dollar Equivalents</u> (2)	<u>Allocation Factor</u> (3)
Residential	58,270	0.7492
Commercial	18,018	0.2317
Industrial	368	0.0047
Large Industrial	59	0.0008
Public Authority	1,054	0.0136
Private Fire	<u>0</u>	<u>0.0000</u>
Total	<u><u>77,769</u></u>	<u><u>1.0000</u></u>

SUEZ WATER PENNSYLVANIA INC.

SUMMARY OF AVERAGE DAILY SEND OUT AND MAXIMUM DAILY USAGE
FOR THE YEARS 2000-2017

Year	Average Daily Send out (MGD)	Maximum Daily Use	
		MGD	Ratio to Average
(1)	(2)	(3)	(4)
2000	16.010	20.137	1.26
2001	17.281	21.573	1.25
2002	17.247	22.597	1.31
2003	17.570	21.991	1.25
2004	18.112	22.207	1.23
2005	18.592	23.222	1.25
2006	18.188	22.856	1.26
2007	19.895	24.576	1.24
2008	19.265	23.575	1.22
2009	18.071	21.814	1.21
2010	19.498	24.391	1.25
2011	19.247	22.252	1.16
2012	18.380	22.537	1.23
2013	18.261	22.268	1.22
2014	18.007	21.094	1.17
2015	18.152	21.090	1.16
2016	17.970	20.444	1.14
2017	17.093	19.422	1.14

SUEZ WATER PENNSYLVANIA INC.

BASIS FOR ALLOCATING DEMAND RELATED COSTS OF FIRE SERVICE
TO PRIVATE AND PUBLIC FIRE PROTECTION CUSTOMER CLASSIFICATIONS

Description (1)	Restrictive Diameters Squared (2)	Quantity (3)	Relative Demand* (4)=(2)x(3)	Allocation Factor (5)
<u>PRIVATE FIRE PROTECTION</u>				
<u>Fire Lines</u>				
2 -inch	4.00	74	296	
3 -inch	9.00	5	45	
4 -inch	16.00	185	2,960	
6 -inch	36.00	317	11,412	
8 -inch	64.00	220	14,080	
10 -inch	100.00	30	3,000	
12 -inch	144.00	10	1,440	
Private Hydrants	26.50	569	15,079	
Total Private Fire Protection		1,410	48,312	0.3512
<u>PUBLIC FIRE PROTECTION</u>				
<u>Hydrant</u>	<u>Nozzle Sizes</u>			
5 1/4" Valve	2- 2-1/2" & 1-5 1/4"	26.50	3,368	89,252
Total Public Fire Protection		3,368	89,252	0.6488
Total Fire Protection		4,778	137,564	1.0000

SUEZ WATER PENNSYLVANIA INC.
CALCULATION OF CUSTOMER COST PER MONTH FOR A 5/8-INCH METER

Cost Function (1)	Cost of Service (2)	Total Units (3)	Cost Per 5/8-inch Meter (4)	Cost Per 5/8-inch Meter Monthly Bill (5)
Meters	2,983,834	77,769 5/8-inch Equivalents	\$38.37	\$3.20
Services	3,804,330	63,972 3/4-inch Equivalents	59.47	4.96
Billing, Collecting and Meter Reading	4,736,307	62,282 Customers	76.05	6.34
Subtotal Customer Costs	<u>\$11,524,471</u>			<u>14.50</u>
Unrecovered Public Fire	<u>3,438,063</u>	77,769 5/8-inch Equivalents	44.21	<u>3.68</u>
Total Customer Costs and Public Fire	<u><u>\$14,962,535</u></u>			<u><u>\$18.18</u></u>

SUEZ WATER PENNSYLVANIA INC.
CALCULATION OF CUSTOMER COST PER MONTH FOR A 5/8-INCH METER
BASED ON DIRECT COSTS

Cost Function (1)	Direct Cost of Service (2)	Total Units (3)	Cost Per 5/8-inch Meter (4)	Cost Per 5/8-inch Meter Monthly Bill (5)
Meters	2,643,964	77,769 5/8-inch Equivalents	\$34.00	\$2.83
Services	3,539,869	63,972 3/4-inch Equivalents	55.33	4.61
Billing, Collecting and Meter Reading	2,871,148	62,282 Customers	46.10	3.84
Subtotal Customer Costs	<u>\$9,054,981</u>			<u>11.28</u>
Unrecovered Public Fire	<u>3,438,063</u>	77,769 5/8-inch Equivalents	44.21	<u>3.68</u>
Total Customer Costs and Public Fire	<u><u>\$12,493,044</u></u>			<u><u>\$14.96</u></u>

SUEZ WATER PENNSYLVANIA INC.

ANALYSIS OF DIRECT CUSTOMER COSTS

Description	Meters	Services	Billing & Collecting
Operation and Maintenance Expenses			
T&D Labor - Operation			
Employee Salaries - Supervision	\$ 7,978		
Employee Salaries - Meters	141,836		
Fringe Benefits	58,775		
T&D Labor - Maintenance			
Employee Salaries - Supervision		\$ 6,408	
Employee Salaries - Structures and Improvements		19,032	
Employee Salaries - Services		74,524	
Fringe Benefits		41,018	
Total Customer Accounting Expenses			\$ 1,960,672
Management Fees - Customer Related			377,179
Management Fees - Employee Related	10,211	6,959	55,857
Transportation Expense	3,666	2,396	27,000
Worker's Compensation	3,421	2,236	25,199
Advertising Expense	114	74	836
Office Rents	1,868	1,221	13,759
Subtotal	227,868	153,869	2,460,501
Depreciation Expense			
Meters	976,632		
Services		696,307	
Office Buildings	7,415	4,847	54,617
Office Furniture & Equipment	1,026	671	7,560
Computer Software - CIS			5,528
Subtotal	985,074	701,825	67,706
Taxes Other Than Income			
Payroll Taxes	21,847	14,890	119,509
Assessments	-	-	-
Subtotal	21,847	14,890	119,509
Rate Base			
Meters	14,543,019		
Services		27,943,391	
Office Land/Buildings	315,200	206,053	2,321,667
Office Furniture and Equipment	10,987	7,183	80,929
Computer Software - CIS			5,528
Materials and Supplies	14,881	9,728	109,611
Deferred Taxes	(1,092,904)	(2,042,846)	(331,069)
Subtotal	13,791,184	26,123,508	2,186,666
Return and Income Taxes	1,409,175	2,669,285	223,432
Total Direct Customer Costs	2,643,964	3,539,869	2,871,148

PART III. COMPARISON OF PRESENT AND PROPOSED RATES

III. COMPARISON OF PRESENT AND PROPOSED RATES

Comparisons of present and proposed rates for each of the customer classifications are set forth in Schedule I.

SUEZ WATER PENNSYLVANIA INC.

COMPARISON OF PRESENT AND PROPOSED RATES

MTR SIZE	Residential			Commercial (includes Apt)			Industrial		
	Present	Proposed	%	Present	Proposed	%	Present	Proposed	%
	Rate	Rate	Increase	Rate	Rate	Increase	Rate	Rate	Increase
5/8"-3/4"	\$ 13.75	\$ 15.00	9.091%	\$ 13.75	\$ 15.00	9.091%	\$ 13.75	\$ 15.00	9.091%
1"	\$ 28.50	\$ 31.09	9.088%	\$ 28.50	\$ 31.09	9.088%	\$ 28.50	\$ 31.09	9.088%
1-1/2"	\$ 57.00	\$ 62.18	9.088%	\$ 57.00	\$ 62.18	9.088%	\$ 57.00	\$ 62.18	9.088%
2"	\$ 97.63	\$ 106.51	9.096%	\$ 97.63	\$ 106.51	9.096%	\$ 97.63	\$ 106.51	9.096%
3"	\$ 183.13	\$ 199.78	9.092%	\$ 183.13	\$ 199.78	9.092%	\$ 183.13	\$ 199.78	9.092%
4"	\$ 305.25	\$ 333.00	9.091%	\$ 305.25	\$ 333.00	9.091%	\$ 305.25	\$ 333.00	9.091%
6"	\$ 610.50	\$ 666.00	9.091%	\$ 610.50	\$ 666.00	9.091%	\$ 610.50	\$ 666.00	9.091%
8"	\$ 976.88	\$ 1,065.69	9.091%	\$ 976.88	\$ 1,065.69	9.091%	\$ 976.88	\$ 1,065.69	9.091%
10"	\$ 1,404.25	\$ 1,531.91	9.091%	\$ 1,404.25	\$ 1,531.91	9.091%	\$ 1,404.25	\$ 1,531.91	9.091%
	Consumption Charge			Consumption Charge			Consumption Charge		
No Block	\$ 7.7506	\$ 9.6700	24.765%	\$ 7.7506	\$ 9.6700	24.765%	\$ 7.7506	\$ 9.6700	24.765%
First 25 MGL				\$ 5.4321	\$ 7.1020	30.741%	\$ 5.7618	\$ 7.9500	37.978%
All Over 25 MGL									

MTR SIZE	Public Authority			Large Industrial		
	Present	Proposed	%	Present	Proposed	%
	Rate	Rate	Increase	Rate	Rate	Increase
5/8"-3/4"	\$ 13.75	\$ 15.00	9.091%	\$ 13.75	\$ 15.00	9.091%
1"	\$ 28.50	\$ 31.09	9.088%	\$ 28.50	\$ 31.09	9.088%
1-1/2"	\$ 57.00	\$ 62.18	9.088%	\$ 57.00	\$ 62.18	9.088%
2"	\$ 97.63	\$ 106.51	9.096%	\$ 97.63	\$ 106.51	9.096%
3"	\$ 183.13	\$ 199.78	9.092%	\$ 183.13	\$ 199.78	9.092%
4"	\$ 305.25	\$ 333.00	9.091%	\$ 305.25	\$ 333.00	9.091%
6"	\$ 610.50	\$ 666.00	9.091%	\$ 610.50	\$ 666.00	9.091%
8"	\$ 976.88	\$ 1,065.69	9.091%	\$ 976.88	\$ 1,065.69	9.091%
10"	\$ 1,404.25	\$ 1,531.91	9.091%	\$ 1,404.25	\$ 1,531.91	9.091%
	Consumption Charge			Consumption Charge		
No Block	\$ 7.7506	\$ 9.6700	24.765%	\$ 3.60450	\$ 4.4000	22.070%
First 25 MGL	\$ 5.4321	\$ 7.1020	30.741%			
All Over 25 MGL						

FIRE PROTECTION

	Private Fire Protection-Monthly			Private Fire Hydrant-Monthly			Public Fire Protection-Monthly		
	Current	Proposed	%	Current	Proposed	%	Current	Proposed	
	Per Unit	Rate	Increase	Per Unit	Rate	Increase	Per Unit	Rate	
2"	\$ 19.30	\$ 22.58	16.995%				Hydrants-BMB	\$ 18.33	\$ 20.00
3"	\$ 52.05	\$ 60.90	17.003%				Hydrants-DAL	\$ 18.33	\$ 20.00
4"	\$ 66.76	\$ 78.11	17.001%	\$ 43.00	\$ 50.31	17.000%	Hydrants-HAR	\$ 24.17	\$ 25.83
6"	\$ 110.98	\$ 129.85	17.003%				Hydrants-MEC	\$ 25.83	\$ 25.83
8"	\$ 165.42	\$ 193.54	16.999%						
10"	\$ 236.86	\$ 277.13	17.002%						
12"	\$ 328.64	\$ 384.51	17.000%						
14"	\$ 603.72	\$ 706.35	17.000%						

SUEZ WATER PENNSYLVANIA INC.

COMPARISON OF PRESENT AND PROPOSED RATES - MAHONING TOWNSHIP

Residential				Commercial			
	Present Rate	Present Allowance	Proposed Rate	Present Rate	Present Allowance	Proposed Rate	
	<u>Minimum</u>		<u>Service Charge*</u>	<u>Minimum</u>		<u>Service Charge*</u>	
5/8"	\$ 64.13	6,000	\$ 15.00	\$ 64.13	6,000	\$ 15.00	
3/4"	\$ 80.85	10,000	\$ 31.09	\$ 80.85	10,000	\$ 31.09	
1"	\$ 98.87	14,000	\$ 62.18	\$ 98.87	14,000	\$ 62.18	
1-1/2"	\$ 134.84	22,000	\$ 106.51	\$ 134.84	22,000	\$ 106.51	
2"	\$ 170.87	30,000	\$ 199.78	\$ 170.87	30,000	\$ 199.78	
3"	NA		\$ 333.00	NA	-	\$ 333.00	
4"	\$ 314.89	62,000	\$ 666.00	\$ 314.89	62,000	\$ 666.00	
6"	\$ 458.91	94,000	\$ 1,065.69	\$ 458.91	94,000	\$ 1,065.69	
Consumption Charge				Consumption Charge			
No Block	\$ 5.8300		\$ 9.6700	\$ 5.8300		\$ 9.6700	
First 25 MGL						\$ 7.1020	
All Over 25 MGL							

* No Allowance

SUEZ WATER PENNSYLVANIA INC.
CALCULATION OF STANDBY RATES

Line No.	Description	Depreciation, Return and Income Taxes	
1	Base Costs	\$ 13,209,210	
2	Extra Capacity Costs:		
3	Maximum Day	5,995,824	
4	Maximum Hour	<u>2,481,448</u>	
5	Total	<u>\$ 21,686,483</u>	
6	Cost per Month (Ln 5 / 12)		\$ 1,807,207
7	Annual Usage, Thousand Gallons	4,311,361	
8	Usage per Day, Thousand Gallons (Ln 7 / 365)		11,812
9	Cost per Month per Thousand Gallons		
10	of Daily Demand (Ln 6 / Ln 8)		\$ 153.00
11	Remaining Base and Extra Capacity Costs	\$ 13,352,576	
12	Cost per Thousand Gallons (Ln 11 / Ln 7)		\$ 3.10

APPENDIX

SUEZ WATER PENNSYLVANIA INC.
WATER UTILITIES

*RESPONSES TO RATE STRUCTURE AND COST OF SERVICE
FILING REQUIREMENTS*

1. Provide a complete, fully allocated, cost of service study if an interval of 3 years has passed between a previous cost of service study and the historic test year date of the current filing. The cost of service study shall provide the necessary data to determine if the water or wastewater rate structure is fair and equitable to all classifications of water or wastewater customers (including public and private fire protection customers) and reflects, as nearly as possible, the cost of providing the service. The study shall correspond to the test year proposed revenue requirements (future test year only, if used). Summaries of conclusions and all back-up calculations shall be made part of the submission of the cost of service study, and shall include the following:
 - a. A description of the allocation methods used. A comparison of the allocated cost of service by class with the present and proposed revenues. A cost of service schedule showing the rate of return produced by present and proposed rates by class of service.

RESPONSE

A description of the methods used for the cost of service study is provided on pages I-2 through I-4 of SWPA Exhibit No. PRH-1. A comparison of the allocated cost of service by class with the present and proposed revenues is provided on Schedule A of SWPA Exhibit No. PRH-1. Schedules B and C showing the rate of return produced by present and proposed rates by customer classification are provided in SWPA Exhibit No. PRH-1.

SUEZ WATER PENNSYLVANIA INC.
WATER UTILITIES

*RESPONSES TO RATE STRUCTURE AND COST OF SERVICE
FILING REQUIREMENTS*

1. Provide a complete, fully allocated, cost of service study if an interval of 3 years has passed between a previous cost of service study and the historic test year date of the current filing. The cost of service study shall provide the necessary data to determine if the water or wastewater rate structure is fair and equitable to all classifications of water or wastewater customers (including public and private fire protection customers) and reflects, as nearly as possible, the cost of providing the service. The study shall correspond to the test year proposed revenue requirements (future test year only, if used). Summaries of conclusions and all back-up calculations shall be made part of the submission of the cost of service study, and shall include the following:
 - b. Indicate if the method used for establishing the allocation factors in the cost of service study deviates from the previous study submitted in the last rate case. If yes, indicate which allocation factors were changed and discuss the reason for the changes.

RESPONSE

The method used for establishing the allocation factors in the cost of service study is the base extra capacity method. This is the same method used in the previous study submitted in the last case.

SUEZ WATER PENNSYLVANIA INC.
WATER UTILITIES

*RESPONSES TO RATE STRUCTURE AND COST OF SERVICE
FILING REQUIREMENTS*

1. Provide a complete, fully allocated, cost of service study if an interval of 3 years has passed between a previous cost of service study and the historic test year date of the current filing. The cost of service study shall provide the necessary data to determine if the water or wastewater rate structure is fair and equitable to all classifications of water or wastewater customers (including public and private fire protection customers) and reflects, as nearly as possible, the cost of providing the service. The study shall correspond to the test year proposed revenue requirements (future test year only, if used). Summaries of conclusions and all back-up calculations shall be made part of the submission of the cost of service study, and shall include the following:
 - c. Supply the average day, the maximum day and the maximum hour deliveries to the system adjusted for storage for the historic test year and 2 prior years. Also provide workpapers, analyses, comparative data or other documentation supporting the estimated maximum day and peak hour demands by customer class reflected in the company's cost of service study.

RESPONSE

Refer to Schedule D of SWPA Exhibit No. PRH-1 for the average day and maximum day system deliveries for the years 2000 through 2017. Support for the customer class demand factors is provided in the attached pages from the Customer Class Demand Study filed in Docket No. R-2011-2232985.

UNITED WATER PENNSYLVANIA INC.

Harrisburg, Pennsylvania

CUSTOMER CLASS DEMAND STUDY

GANNETT FLEMING, INC. - VALUATION AND RATE DIVISION
Harrisburg, Pennsylvania



GANNETT FLEMING, INC.
P.O. Box 67100
Harrisburg, PA 17106-7100
Location:
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May 2, 2011

United Water Pennsylvania Inc.
4211 East Park Circle
Harrisburg, PA 17111

Attention Mr. John Hollenbach
Vice President and General Manager

Gentlemen:

Pursuant to your request, we have prepared a customer class demand study. The study was conducted to provide a basis for the selection of class maximum day and hour demand ratios for use in the cost of service allocation study.

The attached report presents a description of the methods and procedures used, the usage data for each monitored customer, and the detailed calculations of maximum day and hour ratios by classification. The results of the study are presented on page I-6 of the report.

Respectfully submitted,

GANNETT FLEMING, INC.

A handwritten signature in black ink that reads 'Paul R. Herbert'.

PAUL R. HERBERT
President

A handwritten signature in black ink that reads 'Constance E. Heppenstall'.

CONSTANCE E. HEPPENSTALL
Rate Analyst

PRH:krm

053354



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PART I. INTRODUCTION

UNITED WATER PENNSYLVANIA INC.

CUSTOMER CLASS DEMAND STUDY

PART I. INTRODUCTION

PLAN OF REPORT

The report sets forth the results of the customer class demand study conducted during the period of August 2010 through March 2011 for United Water Pennsylvania Inc. (Company). The study is organized into three parts. Part I, Introduction, contains statements with respect to the basis of the study, a description of the methods and procedures used, and a summary of the study results. Part II, Maximum Day and Hour Ratios, sets forth a description of the calculations of the maximum day and maximum hour ratios for each classification as a result of the observed demand data. Part III, Daily and Hourly Usage Data, provides the daily usage for each monitored customer and the hourly usage for selected days during the study period.

BASIS OF STUDY

In the Base Extra-Capacity method of cost allocation, as described in AWWA Manual M1 - Principles of Water Rates, Fees, and Charges, the extra capacity portion of the water system is allocated to customer classifications based on the non-coincident demands of each classification. The non-coincident demand is the sum of the peaks for each class regardless of the day or hour such peaks may occur. The purpose of a customer class demand study is to establish a basis for selecting maximum day and maximum hour ratios for each customer classification. The ratios will be used for allocating maximum day and hour extra capacity costs in the cost of service allocation study prepared for the Company's rate filing. The results of the cost of service allocation study are used as a guide for designing the proposed rate structure.

METHODS AND PROCEDURES

The customers were selected for the study with the objective of obtaining a reasonably representative sample of customers in each class. The residential class sample consists of data from nine SCADA monitoring points that serve exclusively or predominantly residential customers. Most of these sample areas have a mix of medium and high density housing types. Two very large areas are predominantly composed of high density housing. One area is almost exclusively low density housing. The total number of residential customers in the areas sampled is approximately 5,000, which amounts to nearly ten percent of total residential customers served by United Water Pennsylvania Inc..

The commercial customer class is represented by a sample of 38 customers including fast food establishments, restaurants, a health club, hospitals, and hotels, along with a separate grouping of seven apartment complexes. The commercial sample represents approximately ten percent of all consumption by customers coded "commercial" for billing. The apartment sample represents approximately seven percent of consumption by customers coded "apartment". The combined commercial and apartment samples represent approximately nine percent of total consumption by all customers of these two types.

The industrial customer class is represented by a sample of seven customers, including most of the largest customers. The large industrial customer class is represented by the only two customers in this class. The industrial and large industrial customer samples account for 78 percent of consumption by all industrial customers. The public customer class consists of facilities owned by public entities such as offices, prisons, schools, public housing, and wastewater treatment plants. The public customer class is represented by a sample of ten customers that account for approximately 23 percent of consumption by all public customers.

The Company operates a number of separate areas (“systems”) in Pennsylvania. The demand study includes residential SCADA monitoring data from the Harrisburg, Mechanicsburg, and Newberry systems. The commercial, industrial, and public customer class samples include customers in the Harrisburg, Bloomsburg, Mechanicsburg, and Dallas systems. For each class this study combines data from each of these systems to produce maximum day and hour ratios to be applied to the entire United Water Pennsylvania Inc. service area.

The source of the usage data for the residential sample is the Company’s SCADA information system, which continuously monitors flows through a pump or valve, and for areas with tanks also records hourly storage tank levels.

Radio read devices (ERT’s, for “Encoded Receiver Transmitter”) were installed on the non-residential sample customers. The ERT attaches to a customer’s meter and records hourly usage for a fixed period of time, which is then periodically read by a mobile device. The majority of the ERT’s were of the type “100W” and the remainder were OMNI brand devices, which differ slightly in the methods of data storage and retrieval.

The data for each customer are summarized in spreadsheet format for each classification. For each day, the sum of the day’s consumption amounts for all sampled customers in the class is calculated. The maximum of these sums - the coincident maximum day demand – is the peak that occurs for the group of customers at the same time. The non-coincident peak is the sum of each customer’s individual peak usage, regardless of the day on which the peak occurred. The results of both the coincident and non-coincident peak demands are used in the selection of maximum day ratios. These calculations will be discussed further in Part II of the report.

In order to calculate the peak demands for the residential samples, an additional step was required. Six of the nine SCADA monitoring stations have a storage tank connected to the distribution grid. Consequently, the flow data must be adjusted in

order to account for water drawn from or accumulated in the tanks. The adjusted data represents water that was delivered to the distribution system and consumed by customers. An increase in water in a tank over a measuring period represents water pumped but not consumed in that period, and is therefore subtracted from pumpage in order to calculate consumption for that period. The opposite is true for decreases in water storage in the tanks. Company staff performed the calculations to make these adjustments, using SCADA data on tank levels to calculate changes to the volume of water stored in the tanks.

Maximum day and hour ratios were calculated as a result of the peak day and peak hour data recorded from the analysis. The peak day usage is divided by the 2010 average daily usage for each customer to produce the maximum day ratio, and similarly for the maximum hour ratio. For the residential monitoring stations, the average was calculated from the same adjusted SCADA monitoring station data that was used to determine the coincident and non-coincident maximums. For the non-residential customers, the average usage was determined from the billing records over a twelve-month period.

RESULTS OF STUDY

A description of the calculations of the maximum day and hour ratios for each customer classification is provided in Part II of the report. The selected ratios for use in the cost of service allocation study accompanying this report are summarized in the table below. A listing of the daily and peak hourly usage for the nine SCADA monitoring points and for each monitored customer is provided in Part III of the report.

SUMMARY OF MAXIMUM DAY AND HOUR RATIOS

<u>Customer Classification</u>	<u>Maximum Day Ratio</u>	<u>Maximum Hour Ratio</u>
Residential	1.6	2.7
Commercial	1.6	5.0
Industrial	1.7	4.8
Large Industrial	1.7	2.9
Public	1.6	4.0

PART II. MAXIMUM DAY AND HOUR RATIOS

PART II. MAXIMUM DAY AND HOUR RATIOS

Residential - Maximum Day. The maximum day ratios for the residential class are based on weighted coincident and non-coincident ratios resulting from the analysis of data from nine SCADA monitoring points. For the selection of maximum day ratios, more weight is given to the coincident analysis because maximum day facilities serve customers over several distribution systems. The non-coincident analysis was considered because it represents the potential peak demands of each SCADA monitoring point and it provides an indication of what the coincident maximum ratio would be if each monitoring point's peak usage occurred on the same day, and also reflects the demands placed on facilities at the local level.

The coincident and non-coincident maximum day ratios are calculated on Schedule 1. The maximum day usage in gallons and the date on which the peak usage occurred are shown in columns 5 and 6 for each residential zone represented by SCADA monitoring point in column 1. The average day usage is shown in column 4, and is based on 2010 SCADA data for that monitoring point. The maximum day ratio for each area is calculated by dividing the peak day usage by the average daily usage and is shown in column 7.

The residential non-coincident maximum day ratio for the Company is calculated as a weighted composite of each SCADA monitoring point's maximum day ratio shown in column 7. The weighting is selected in order to be representative of the housing distribution types in the Company's service area. Through the use of the Company's GIS system, it was determined that 8.5 percent of the Company's residential customers have a lot size over 0.6 acres, regarded as the size of low density housing. The balance of customer lots (91.5%) are 0.6 acres and under, corresponding to a mix of medium and high density housing. These characteristics are used in the weightings shown in column 10. The non-coincident maximum day ratio for the area served by Continental Booster, which is a low density development, is given a weight of 8.5%. The ratios for

the remaining eight monitoring stations are considered reasonably representative of the balance of the service area (medium and high density). These ratios are averaged and the resulting average is given a weight of 91.5%. The resulting weighted composite non-coincident maximum day ratio, shown in column 11, is 1.68.

The coincident maximum day--the day with the highest usage of all of the sampled SCADA monitoring stations combined--occurred on July 5, 2010. The calculation of the coincident maximum day ratio uses the same process as for the non-coincident maximum day. In this case, the coincident maximum day ratio analysis uses a weighted composite of each SCADA monitoring point's ratio on the coincident maximum day. Each monitoring point's usage and ratio on the coincident maximum day are shown in columns 8 and 9 respectively. The composite is calculated using the same weights that are used to determine a non-coincident maximum day ratio. Column 12 shows that the composite average of the ratios on the coincident maximum day is 1.39.

Based on the composite coincident ratio of 1.39 and the non-coincident ratio of 1.68, the maximum day ratio for residential customers is estimated at 1.6.

Residential - Maximum Hour. The analysis of maximum hour data was performed in a similar manner as the maximum day analysis. The maximum hour was found by examining the hourly usage on a day of relatively high use for that SCADA monitoring point. The calculation of non-coincident maximum hour ratios is summarized on Schedule 2.

The selection of the maximum hour ratio is based exclusively on the non-coincident analysis because maximum hour facilities are those that are required to meet peak demands at a certain location or local distribution system. The non-coincident ratios for the nine SCADA monitoring points range from 1.43 to 5.67. The composite average of these ratios using the weights described above for maximum day is 2.68. Based on these results, the maximum hour ratio for residential customers is estimated at 2.7.

UNITED WATER PENNSYLVANIA INC.
SUMMARY OF NON-COINCIDENT AND COINCIDENT MAXIMUM DAY RATIOS
BASED ON SCADA DATA, JANUARY THROUGH DECEMBER 2010
RESIDENTIAL

SCADA Monitoring Point (1)	Density* (2)	System (3)	Average Hour, Gallons (4)	Non-Coincident Maximum Day			Coincident Maximum Day (7/5/2010)		Composite Ratio Computation		
				Usage (5)	Date (6)	Ratio (7)	Usage (8)	Ratio (9)	Weight (10)	Non-Coincident (11)=(7)X(10)	Coincident (12)=(9)X(10)
Oberlin***	High	HBG	497,452	629,000	2/7/2010	1.26	554,000	1.11			
Sixth Street***	High	HBG	172,196	346,000	9/9/2010	2.01	209,583	1.22			
Blue Meadows	Medium & High	HBG	125,179	178,000	7/5/2010	1.42	178,000	1.42			
Marysville***	Medium & High	HBG	274,622	352,203	9/15/2010	1.28	299,376	1.09			
Hidden Lakes	Medium & High	HBG	89,027	129,000	7/5/2010	1.45	129,000	1.45			
Susquehanna Village	Medium & High	NEW	59,630	87,000	7/5/2010	1.46	87,000	1.46			
Forest Hills***	Medium	HBG	57,224	99,688	9/12/2010	1.74	72,070	1.26			
Center Square	Medium	MECH	114,838	196,490	9/15/2010	1.71	151,540	1.32			
Subtotal of Medium and High Density - Average of Ratios						1.54		1.29	91.5%	1.41	1.18
Continental Booster	Low	HBG	6,872	22,000	6/20/2010	3.20	16,000	2.33	8.5%	0.27	0.20
Composite Maximum Day Ratio****										1.68	1.38

*All areas have a mix of medium and high housing densities, with the exception of Continental Booster. The predominant density or combination of densities is listed.

** Average usage based on annual SCADA data divided by 365 days.

***Includes some non-residential customers (less than 10% by number of customers)

****A weighted average of the ratios, in which the low density area ratio is weighted by 8.5% to reflect the low density composition of the UWPA service area and the medium and high density area ratios are equally weighted for the remaining 91.5%.

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II-4

UNITED WATER PENNSYLVANIA INC.
SUMMARY OF MAXIMUM HOUR RATIOS
BASED ON SCADA DATA, JANUARY THROUGH DECEMBER 2010
RESIDENTIAL

SCADA Monitoring Point (1)	Density (2)	System (3)	Average Usage* (4)	Maximum Hour Usage			Maximum Hour Ratio (8)	Composite Ratio Calculation	
				Gallons (5)	Date (6)	Hour (7)		Weighting (9)	Ratio (10)=(8) X (9)
Sixth Street**	High	HBG	7,175	18,525	7/4/2010	11:00 AM	2.58		
Forest Hills**	Medium	HBG	2,384	8,630	5/27/2010	8:00 PM	3.62		
Blue Meadows	Medium & High	HBG	5,216	15,012	7/5/2010	8:00 PM	2.88		
Oberlin**	High	HBG	20,727	34,168	2/7/2010	11:00 AM	1.65		
Marysville**	Medium & High	HBG	11,443	16,325	12/7/2010	7:00 PM	1.43		
Hidden Lakes	Medium & High	HBG	3,709	9,867	7/5/2010	12:00 PM	2.66		
Susquehanna Village	Medium & High	NEW	2,485	4,823	7/5/2010	6:00 PM	1.94		
Center Square	Medium	MECH	4,772	11,718	7/4/2010	11:00 AM	2.46		
Subtotal of Medium and High Density - Average of Ratios							2.40	91.5%	2.20
Continental Booster	Low	HBG	286	1,625	7/4/2010	10:00 AM	5.67	8.5%	0.48
Composite Maximum Hour Ratio***									2.68

* Average usage based on annual SCADA data divided by 365 days and divided by 24 hours.

**Includes some non-residential customers (less than 10% by number of customers)

***A weighted average of the ratios, in which the Continental Booster ratio is weighted by 8.5% to reflect the low density composition of the UWPA service area and the balance of the other pumping station ratios are equally weighted for the remaining 91.5%.

A-19
II-5

Commercial - Maximum Day. The data for the sampled commercial customers were gathered and summarized in a similar manner as the residential class and are presented in Schedule 3. Besides the sample of customers coded as “commercial” for billing, an additional sample of seven customers who are coded for billing as “apartments” was examined to determine whether this group constituted a sufficiently different customer type in terms of capacity ratios to warrant creation of a separate customer class for apartments. The results for the apartment sample are presented in Schedule 4. Maximum day ratios for a combined sample of the commercial customers and the additional apartments are shown in Schedule 5.

Commercial customers are separated by system or service area including Harrisburg, Bloomsburg, Mechanicsburg, and Dallas. Since each system is essentially stand-alone, each area was considered separately. The maximum day usage in gallons and the date on which the peak usage occurred are shown in columns 5 and 6 for each customer. The average day usage, shown in column 4, is based on total consumption billed in 2010 divided by total days billed. The maximum day ratio for each customer, shown in column 7, is calculated by dividing the peak day usage by the average daily usage. The non-coincident demand for each system’s commercial customers, shown in column 5, is the sum of each customer’s maximum demand. The non-coincident maximum day ratio for the each system’s commercial customers is calculated as the non-coincident maximum demand divided by the average daily consumption.

For the commercial customer sample shown in Schedule 3, the non-coincident maximum day ratios for the four areas range from 1.72 for the Bloomsburg system to 2.39 for Harrisburg. The commercial composite non-coincident maximum day ratio for all of United Water Pennsylvania is calculated as a weighted average of the ratios of these four areas. Each system’s ratio is weighted by its share of the total commercial consumption by all commercial customers in all four systems. For example, out of all commercial consumption in these four systems for the year 2009, 66.4 percent occurred

in the Harrisburg system; so Harrisburg's ratio is weighted at 66.4 percent. The resulting composite non-coincident commercial maximum day ratio is 2.20.

The coincident maximum day ratio is computed in the same manner. A coincident maximum day and ratio are identified for each system and ratios are combined using the same weighting as for the non-coincident ratio. The coincident ratios for the systems range from 1.40 for Harrisburg to 2.01 for Dallas. The resulting weighted composite coincident ratio for commercial customers is 1.46.

The analysis for apartments is shown in Schedule 4. The non-coincident maximum day ratio for the apartments in the Harrisburg system is 1.92 and the ratio for the Mechanicsburg system is 1.98. The weighted composite non-coincident ratio is computed analogously to that described above for commercial customers, in this case using the system's share of all consumption by customers coded as "apartment". The weighting is 96.2% for Harrisburg and 3.8% for Mechanicsburg, resulting in a composite non-coincident demand ratio of 1.93 for apartments. The coincident maximum day ratio in the Harrisburg system is 1.40, which is combined with Mechanicsburg's ratio of 1.98 for a weighted composite coincident maximum day ratio of 1.43.

The analysis for the combined sample of the mixed commercial customers and the seven additional apartments is shown in Schedule 5. The non-coincident ratios for the individual systems range from 1.72 for the Bloomsburg system to 2.20 for the Harrisburg system. The weighting used in calculating the composite ratio for the combined grouping uses the share of consumption by all customers coded as commercial or apartment. The resulting weighted composite non-coincident maximum day ratio is 2.13. The coincident maximum day ratios range from 1.19 in Harrisburg to 2.01 in Dallas. The weighted composite coincident maximum day ratio for the combined commercial and apartment samples is 1.27. The ratios for the three commercial groupings are shown on the following page.

Summary of Commercial Maximum Day Ratios

	<u>Non-coincident</u>	<u>Coincident</u>
Commercial	2.20	1.46
Apartments	1.93	1.43
Combined	2.13	1.27

The difference in ratios among the three commercial groupings is considered not sufficiently significant to warrant the treatment of apartments as a separate customer class. Based on the ratios presented above, the maximum day ratio for the commercial class is estimated at 1.6.

UNITED WATER PENNSYLVANIA INC.
SUMMARY OF NON-COINCIDENT AND COINCIDENT MAXIMUM DAY RATIOS
DURING THE PERIOD AUGUST 2010 THROUGH MARCH 2011
COMMERCIAL CUSTOMERS

Account Number	Type	Recorder Type	Average Day Gallons *	Maximum Day			Composite Ratio Calculation		
				Usage	Date	Ratio	Weight **	Non-Coincident (9)=(7)X(8)	Coincident (10)=(7)X(8)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)=(7)X(8)	(10)=(7)X(8)
Harrisburg System									
999-856-941	Funeral Home	100W	233	870	3/25/2011	3.74			
999-832-785	Dentist	100W	422	1,840	2/3/2011	4.36			
998-910-171	Restaurant	100W	3,055	3,980	1/0/1900	1.30			
998-604-371	Restaurant	100W	809	2,370	4/1/2011	2.93			
998-845-004	Day Care	100W	844	1,460	3/29/2011	1.73			
999-835-062	Office Building	100W	121	270	1/10/2011	2.24			
998-694-780	Bowling Lanes	100W	580	1,900	3/19/2011	3.28			
999-796-266	Store and Car Wash	100W	5,079	18,500	2/13/2011	3.64			
998-754-807	Restaurant	100W	5,299	5,700	1/1/2011	1.08			
998-759-416	Health Club	100W	1,382	3,200	1/0/1900	2.32			
998-641-386	Convenience Store	100W	3,778	10,400	1/15/2011	2.75			
998-960-375	Restaurant	100W	890	1,400	2/12/2011	1.57			
999-871-967	Home Center	100W	1,301	2,000	8/31/2010	1.54			
999-320-207	Department Store	100W	1,299	2,500	9/18/2010	1.92			
999-956-491	Laundromat	100W	2,541	5,800	4/3/2011	2.28			
999-928-727	Department Store	100W	6,099	9,000	9/1/2010	1.48			
999-034-306	Office Building	100W	1,000	8,300	3/21/2011	8.30			
999-997-961	Bakery	100W	25,090	47,000	3/16/2011	1.87			
999-997-653	Hospital	100W	12,959	63,000	2/23/2011	4.86			
999-997-631	Hospital	100W	23,055	35,000	1/11/2011	1.52			
999-060-365	Indoor Shopping Mall	100W	19,077	55,000	8/31/2010	2.88			
998-681-943	Hotel	100W	25,777	45,000	9/5/2010	1.75			
998-516-074	Bank	100W	40	280	3/29/2011	6.95			
999-928-045	Medical Office	100W	80	380	3/31/2011	4.77			
998-579-060	Hotel	OMNI	8,609	18,331	8/21/2010	2.13			
998-567-389	Hotel	OMNI	4,932	12,974	8/21/2010	2.63			
998-545-499	Hotel	OMNI	5,352	22,797	9/1/2010	4.26			

(Continued on next page.)

UNITED WATER PENNSYLVANIA INC.
SUMMARY OF NON-COINCIDENT AND COINCIDENT MAXIMUM DAY RATIOS
DURING THE PERIOD AUGUST 2010 THROUGH MARCH 2011
COMMERCIAL CUSTOMERS

Account Number (1)	Type (2)	Recorder Type (3)	Average Day Gallons * (4)	Maximum Day			Composite Ratio Calculation		
				Usage (5)	Date (6)	Ratio (7)	Weight ** (8)	Non-Coincident (9)=(7)X(8)	Coincident (10)=(7)X(8)
<u>Harrisburg System</u> (Continued from previous page.)									
998-523-686	Bank and Restaurant	OMNI	293	1,038	11/13/2010	3.54			
998-504-799	Church	OMNI	883	3,992	3/13/2011	4.52			
998-557-888	Office and Apartments	OMNI	423	1,219	12/8/2010	2.88			
Non-coincident Demand			161,302	385,501		2.39	66.4%	1.59	
Coincident Demand			161,302	225,671	2/18/2011	1.40	66.4%		0.93
<u>Bloomsburg System</u>									
999-406-876	Medical Office	100W	13,016	21,000	9/2/2010	1.61			
999-596-076	Hospital	100W	18,663	25,700	9/2/2010	1.38			
999-592-226	Mobile Home Park	100W	11,934	32,000	3/13/2011	2.68			
998-943-061	Truck Stop	100W	17,121	25,500	3/26/2011	1.49			
Non-coincident Demand			60,734	104,200		1.72	15.8%	0.27	
Coincident Demand			60,734	87,800	3/15/2011	1.45	15.8%		0.23
<u>Mechanicsburg System</u>									
999-490-146	Apts. & Assisted Living	100W	20,841	26,100	1/14/2011	1.25			
998-852-542	Fuel Oil Retailer	OMNI	1,466	15,197	12/20/2010	10.37			
998-448-365	Laundromat	OMNI	1,365	3,550	3/6/2011	2.60			
Non-coincident Demand			23,672	44,847		1.89	14.9%	0.28	
Coincident Demand			23,672	38,289	12/20/2010	1.62	14.9%		0.24
<u>Dallas System</u>									
998-697-904	Apartments & Villas	OMNI	5,825	11,726	9/10/2010	2.01	2.9%	0.06	0.06
COMPOSITE MAXIMUM DAY RATIOS								2.20	1.46

* Average daily consumption is based on billed consumption for the twelve months of 2010, except for Mid Penn Bank, Sonic Drive In, Fiesta Mexico, and William Kotsalos. These customers use available early 2011 billed consumption in place of early 2010 consumption due to unavailability of data or nonrepresentative conditions (e.g., construction) over that period of 2010.

**The system's commercial consumption as a percentage of total commercial consumption across all four systems.

UNITED WATER PENNSYLVANIA INC.

SUMMARY OF NON-COINCIDENT AND COINCIDENT MAXIMUM DAY RATIOS
DURING THE PERIOD AUGUST 2010 THROUGH MARCH 2011
APARTMENTS

Account Number (1)	Recorder Type (2)	Average Day, Gallons * (3)	Maximum Day			Composite Ratio Calculation			
			Usage (4)	Date (5)	Ratio (6)	Weight (7)	Non-Coincident (8) = (6) X (7)	Coincident (9) = (6) X (7)	
<u>Harrisburg System</u>									
999-829-914	100W	8,096	12,400	10/16/2010	1.53				
999-998-896	100W	31,363	53,000	9/26/2010	1.69				
999-017-982	100W	23,836	35,000	9/20/2010	1.47				
999-326-059	100W	16,652	40,003	9/7/2010	2.40				
998-766-148	100W	7,458	31,000	3/31/2011	4.16				
999-998-291	100W	<u>21,647</u>	<u>38,000</u>	3/31/2011	1.76				
Non-Coincident Demand		109,050	209,403		1.92	96.2%	1.85		
Coincident Demand		109,050	152,400	3/31/2011	1.40	96.2%		1.35	
<u>Mechanicsburg System</u>									
999-478-244	100W	11,101	22,000	9/27/2010	1.98	3.8%	<u>0.08</u>	<u>0.08</u>	
COMPOSITE MAXIMUM DAY RATIOS								1.93	1.43

* Average day is based on billed consumption for the twelve months of 2010.

**The system's apartment consumption as a percentage of total apartment consumption over both systems.

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UNITED WATER PENNSYLVANIA INC.

SUMMARY OF NON-COINCIDENT AND COINCIDENT MAXIMUM DAY RATIOS
DURING THE PERIOD AUGUST 2010 THROUGH MARCH 2011
COMBINED APARTMENTS AND COMMERCIAL CUSTOMERS

System (1)	Average Day, Gallons (2)	Maximum Day			Weight *	Composite Ratio Calculation	
		Usage (3)	Date (4)	Ratio (5)		Non-Coincident (7)= (5) X (6)	Coincident (8)= (5) X (6)
HARRISBURG							
Non-Coincident Demand	270,352	594,904		2.20	78.0%	1.72	
Coincident Demand	270,352	321,171	2/18/2011	1.19	78.0%		0.93
BLOOMSBURG							
Non-Coincident Demand	60,734	104,200		1.72	9.7%	0.17	
Coincident Demand	60,734	87,800	3/15/2011	1.45	9.7%		0.14
MECHANICSBURG							
Non-Coincident Demand	34,774	66,847		1.92	10.5%	0.20	
Coincident Demand	34,774	51,634	12/13/2010	1.48	10.5%		0.16
DALLAS							
Coincident/Non-Coincident Demand	5,825	11,726	9/10/2010	2.01	1.8%	0.04	0.04
COMPOSITE MAXIMUM DAY RATIOS						2.13	1.27

* The system's commercial and apartment consumption as a percentage of total apartment and commercial consumption across all four systems.

Commercial - Maximum Hour. The maximum hour data for the sampled commercial customers are presented in Schedule 6. The selection of maximum hour ratios is based exclusively on the non-coincident analysis because maximum hour facilities are required to meet peak demands at a certain location or local distribution system. The non-coincident maximum hour ratios range from 2.88 for Bloomsburg to 6.18 for Harrisburg. The composite non-coincident maximum hour ratio for all of United Water Pennsylvania Inc. is calculated as a weighted average, using the same weighting as for the maximum day ratios. The resulting composite maximum hour ratio is 5.54.

The maximum hour data for the sample of seven apartments is shown in Schedule 7. The non-coincident maximum hour ratio for the apartments in the Harrisburg system is 3.65 and the ratio for the Mechanicsburg system is 6.49. The weighted composite maximum hour ratio for apartments is calculated using the same weights as for the maximum day ratio for apartments. The resulting composite maximum hour ratio for apartments is 3.76.

The maximum hour data for the combined commercial and apartment samples is shown in Schedule 8. The non-coincident maximum hour ratio for the four systems ranges from 2.88 for Bloomsburg to 5.97 for Dallas. The weighted composite non-coincident maximum hour ratio is 5.02.

The maximum hour ratios for the three commercial groupings are shown below.

Summary of Commercial Non-Coincident
Maximum Hour Ratios

	<u>Ratio</u>
Commercial	5.54
Apartments	3.76
Combined	5.02

Based on these results, the maximum hour ratio for the commercial class is estimated at 5.0.

UNITED WATER PENNSYLVANIA INC.
SUMMARY OF MAXIMUM HOUR RATIOS
DURING THE PERIOD AUGUST 2010 THROUGH MARCH 2011
COMMERCIAL CUSTOMERS

Account Number (1)	Type (2)	Recorder Type (3)	Average Hour, Gallons (4)	Maximum Hour Usage			Max Hour Ratio (8)	Composite Ratio Calculation	
				Gallons (5)	Date (6)	Hour (7)		Weight * (9)	Ratio (10)=(8)X(9)
<u>Harrisburg System</u>									
999-856-941	Funeral Home	100W	10	130	10/14/2010	11:00 AM	13.40		
999-832-785	Dentist	100W	18	390	2/3/2011	1:00 PM	22.18		
998-910-171	Restaurant	100W	127	350	10/12/2010	6:00 PM	2.75		
998-604-371	Restaurant	100W	34	240	2/18/2011	4:00 PM	7.12		
998-845-004	Day Care	100W	35	310	3/29/2011	11:00 AM	8.82		
999-835-062	Office Building	100W	5	60	3/2/2011	3:00 PM	11.95		
998-694-780	Bowling Lanes	100W	24	300	3/19/2011	12:00 AM	12.42		
999-796-266	Store and Car Wash	100W	212	2,100	2/13/2011	4:00 PM	9.92		
998-754-807	Restaurant	100W	221	600	10/7/2010	9:00 PM	2.72		
998-759-416	Health Club	100W	58	400	1/31/2011	6:00 PM	6.95		
998-641-386	Convenience Store	100W	157	900	1/9/2011	4:00 PM	5.72		
998-960-375	Restaurant	100W	37	200	1/15/2011	7:00 PM	5.39		
999-871-967	Home Center	100W	54	300	1/20/2011	8:00 AM	5.53		
999-320-207	Department Store	100W	54	300	2/15/2011	2:00 PM	5.54		
999-956-491	Laundromat	100W	106	1,200	12/31/2010	2:00 PM	11.33		
999-928-727	Department Store	100W	254	1,600	1/5/2011	2:00 PM	6.30		
999-034-306	Office Building	100W	42	700	2/16/2011	12:00 PM	16.80		
999-997-961	Bakery	100W	1,045	6,000	3/16/2011	11:00 AM	5.74		
999-997-653	Hospital	100W	540	4,000	2/24/2011	12:00 PM	7.41		
999-997-631	Hospital	100W	961	4,000	1/11/2011	2:00 PM	4.16		
999-060-365	Indoor Shopping Mall	100W	795	5,000	8/31/2010	8:00 AM	6.29		
998-681-943	Hotel	100W	1,074	5,000	9/5/2010	7:00 AM	4.66		
998-516-074	Bank	100W	2	150	3/29/2011	10:00 AM	89.35		
999-928-045	Medical Office	100W	3	150	3/31/2011	11:00 AM	45.19		
998-579-060	Hotel	OMNI	359	2,502	8/21/2010	7:00 AM	6.97		
998-567-389	Hotel	OMNI	205	1,896	8/21/2010	6:00 AM	9.23		
998-545-499	Hotel	OMNI	223	1,741	11/7/2010	6:00 PM	7.81		

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UNITED WATER PENNSYLVANIA INC.
SUMMARY OF MAXIMUM HOUR RATIOS
DURING THE PERIOD AUGUST 2010 THROUGH MARCH 2011
COMMERCIAL CUSTOMERS

Account Number (1)	Type (2)	Recorder Type (3)	Average Hour, Gallons (4)	Maximum Hour Usage			Max Hour Ratio (8)	Composite Ratio Calculation	
				Gallons (5)	Date (6)	Hour (7)		Weight * (9)	Ratio (10)=(8)X(9)
<u>Harrisburg System</u> (Continued from previous page.)									
998-523-686	Bank and Restaurant	OMNI	12	172	11/13/2010	5:00 PM	14.08		
998-504-799	Church	OMNI	37	571	12/4/2010	1:00 PM	15.51		
998-557-888	Office and Apartments	OMNI	17	278	12/8/2010	5:00 PM	16.68		
Non-Coincident Demand			6,720	41,540			6.18	66.4%	4.10
<u>Bloomsburg System</u>									
999-406-876	Medical Office	100W	542	2,000	9/2/2010	8:00 AM	3.69		
999-596-076	Hospital	100W	778	1,800	9/2/2010	11:00 AM	2.31		
999-592-226	Mobile Home Park	100W	497	2,000	2/27/2011	10:00 AM	4.02		
998-943-061	Truck Stop	100W	713	1,500	2/28/2011	6:00 PM	2.10		
Non-Coincident Demand			2,531	7,300			2.88	15.8%	0.46
<u>Mechanicsburg System</u>									
999-490-146	Apts. & Assisted Living	100W	868	2,200	8/30/2010	6:00 PM	2.53		
998-852-542	Fuel Oil Retailer	OMNI	61	2,538	10/11/2010	7:00 AM	41.56		
998-448-365	Laundromat	OMNI	57	599	11/21/2010	11:00 AM	10.53		
Non-Coincident Demand			986	5,337			5.41	14.9%	0.81
<u>Dallas System</u>									
998-697-904	Apartments & Villas	OMNI	243	1,450	9/10/2010	11:00 AM	5.97	2.9%	0.17
COMPOSITE NON-COINCIDENT MAXIMUM HOUR DEMAND RATIO									5.54

*The system's commercial consumption as a percentage of total commercial consumption across all four systems.

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UNITED WATER PENNSYLVANIA INC.
SUMMARY OF MAXIMUM HOUR RATIOS
DURING THE PERIOD AUGUST 2010 THROUGH MARCH 2011
APARTMENTS

Account Number (1)	Recorder Type (2)	Average Hour, Gallons (3)	Maximum Hour Usage			Max Hour Ratio (7)	Composite Ratio Calculation	
			Gallons (4)	Date (5)	Hour (6)		Weight * (8)	Ratio (9)=(7)X(8)
<u>Harrisburg System</u>								
999-829-914	100W	337	800	9/20/10	10:00 AM	2.37		
999-998-896	100W	1,307	2,500	1/9/11	11:00 AM	1.91		
999-017-982	100W	993	3,000	9/20/10	1:00 AM	3.02		
999-326-059	100W	694	3,000	1/18/11	11:00 AM	4.32		
998-766-148	100W	311	4,000	12/20/10	6:00 AM	12.87		
999-998-291	100W	902	3,290	1/22/11	10:00 AM	3.65		
Non-Coincident Demand		4,544	16,590			3.65	96.2%	3.51
<u>Mechanicsburg System</u>								
999-478-244	100W	463	3,000	1/31/11	11:00 PM	6.49	3.8%	0.25
COMPOSITE NON-COINCIDENT MAXIMUM HOUR DEMAND RATIO								3.76

*The system's apartment consumption as a percentage of total apartment consumption over both systems.

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UNITED WATER PENNSYLVANIA INC.
 SUMMARY OF MAXIMUM HOUR RATIOS
 DURING THE PERIOD AUGUST 2010 THROUGH MARCH 2011
 COMBINED APARTMENTS AND COMMERCIAL

<u>System</u> (1)	<u>Average Hour, Gallons</u> (2)	<u>Maximum Hour</u>		Composite Ratio Calculation	
		<u>Usage</u> (3)	<u>Ratio</u> (4)	<u>Weight</u> * (5)	<u>Ratio</u> (6)=(4) X (5)
NON-COINCIDENT DEMAND					
Harrisburg	11,264	58,130	5.16	78.0%	4.02
Bloomsburg	2,531	7,300	2.88	9.7%	0.28
Mechanicsburg	1,449	8,337	5.75	10.5%	0.60
Dallas	243	1,450	5.97	1.8%	0.11
COMPOSITE NON-COINCIDENT MAXIMUM HOUR DEMAND RATIO					5.02

*The system's commercial and apartment consumption as a percentage of total apartment and commercial consumption across all four systems.

Industrial and Large Industrial - Maximum Day. The maximum day data for the industrial and large industrial classes are presented in Schedule 9. Because the sampled industrial customers constitute roughly three-fourths of all consumption by industrial customers, the sample data are considered sufficiently representative of the population of industrial customers to use without any weighting adjustments to the results based on location. Two sets of ratios were calculated for the industrial class: one for the large industrial customers, which consists of two customers, and one for the remaining industrial customers. The average daily consumption, shown in column 4, is the total billed usage for 2010 divided by total days billed. The non-coincident demand for the seven industrial customers, shown in column 5, is the sum of each customer's maximum demand. The non-coincident maximum day ratio for the industrial customers is calculated as the non-coincident maximum demand divided by the average daily consumption.

For the general class of industrial customers, the coincident maximum day, October 27, 2011, is the day on which the sum of all of the sampled customers' demands was at its maximum. The coincident maximum demand, 451,080, is the demand on this coincident maximum day. The coincident maximum day ratio is calculated as the coincident maximum demand divided by the average daily consumption (shown in column 4). One of the customers was excluded from calculating the average for the coincident maximum ratio because a lack of monitoring data for that day.

The resulting ratios are shown in column 7. Based on the 1.85 non-coincident ratio and the 1.67 coincident ratio, the maximum day ratio for the industrial class is estimated at 1.7.

Analogous calculations were performed for the separate category of large industrial customers. The non-coincident maximum day ratio for the two large industrial customers combined is 1.71 and the coincident maximum day ratio is 1.63. Based on

these two ratios, the maximum day ratio for large industrial customers is estimated as 1.7, the same as for the general industrial class.

Industrial and Large Industrial - Maximum Hour. The maximum hour data for the industrial and large industrial classes are presented in Schedule 10. The selection of maximum hour ratios is based exclusively on the non-coincident analysis because maximum hour facilities are those which are required to meet peak demands at a certain location or local distribution system. The non-coincident maximum hour ratio for the general class of sampled industrial customers, calculated by dividing the sum of the maximum hourly demands (in column 5) by the sum of the average hourly demands (in column 4), is 4.85. Based on this result, and informed by a review of the component maximum hour ratios, the non-coincident hourly demand ratio for the industrial class is estimated as 4.8.

The non-coincident maximum hour ratios for the two large industrial customers were 2.66 and 3.07, with a ratio for both combined at 2.87. Based on these results the non-coincident maximum hour ratio for large industrial customers is estimated at 2.9.

UNITED WATER PENNSYLVANIA INC.

SUMMARY OF NON-COINCIDENT AND COINCIDENT MAXIMUM DAY RATIOS
DURING THE PERIOD AUGUST 2010 THROUGH MARCH 2011

INDUSTRIAL AND LARGE INDUSTRIAL CUSTOMERS

Account Number (1)	System (2)	Recorder Type (3)	Average Day, Gallons * (4)	Maximum Day		
				Gallons (5)	Date (6)	Ratio (7)
<u>Industrial</u>						
999-998-346	HBG	100W	1,293	4,500	8/30/2010	3.48
999-998-676	HBG	100W	4,951	7,000	2/17/2011	1.41
999-595-922	BLOOM	100W	122,479	203,000	10/5/2010	1.66
99-595-900	BLOOM	100W	61,570	155,000	10/25/2010	2.52
999-595-867	BLOOM	100W	959	2,670	9/2/2010	2.78
999-586-605	BLOOM	100W	17,641	43,300	9/22/2010	2.45
999-539-767	MECH	100W	66,931	95,000	9/13/2010	1.42
Non-Coincident Demand			275,825	510,470		1.85
Coincident Demand			270,874 **	451,080 **	10/27/2010	1.67
<u>Large Industrial</u>						
999-997-840	HBG	OMNI	236,255	332,930	9/2/2010	1.41
999-606-889	BLOOM	100W	250,512	501,000	2/11/2011	2.00
Non-Coincident Demand			486,767	833,930		1.71
Coincident Demand			486,767	792,630	2/11/2011	1.63

* Average day is based on billed consumption for the twelve months of 2010.

** Account # 999-998-676 is not included because it does not have any recorded data on this date (10/27/10).

UNITED WATER PENNSYLVANIA INC.
SUMMARY OF MAXIMUM HOUR RATIOS
DURING THE PERIOD AUGUST 2010 THROUGH MARCH 2011
INDUSTRIAL AND LARGE INDUSTRIAL CUSTOMERS

Account Number (1)	System (2)	Recorder Type (3)	Average Hour, Gallons (4)	Maximum Hour Usage			Max Hour Ratio (8)
				Gallons (5)	Date (6)	Hour (7)	
<u>Industrial</u>							
999-998-346	HBG	100W	54	1,000	8/30/10	4:00 AM	18.56
999-998-676	HBG	100W	206	2,000	2/17/2011	1:00 AM	9.70
999-595-922	BLOOM	100W	5,103	30,000	9/23/2010	12:00 AM	5.88
99-595-900	BLOOM	100W	2,565	10,000	3/10/2011	2:00 PM	3.90
999-595-867	BLOOM	100W	40	370	3/1/2011	3:00 PM	9.26
999-586-605	BLOOM	100W	735	3,400	2/28/2011	6:00 AM	4.63
999-539-767	MECH	100W	2,789	9,000	10/30/2010	6:00 AM	3.23
Non-Coincident Demand			11,493	55,770			4.85
<u>Large Industrial</u>							
999-997-840	HBG	OMNI	9,844	26,140	12/8/2010	4:00 AM	2.66
999-606-889	BLOOM	100W	10,438	32,000	8/30/2010	3:00 PM	3.07
Non-Coincident Demand			20,282	58,140			2.87

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Schedule 10

Public – Maximum Day. The maximum day data for public customers is shown in Schedule 11. The calculation of non-coincident and coincident maximum day ratios are performed in a manner similar to that for the industrial class. The calculated non-coincident maximum day ratio for the sampled public customers is 2.00. The calculated coincident maximum day ratio for the sampled public customers is 1.48. Based on these results, the maximum day ratio for the public customer class is estimated at 1.6.

Public – Maximum Hour. The maximum hour data for the public customer class are presented in Schedule 12. The selection of maximum hour ratios is based exclusively on the non-coincident analysis because maximum hour facilities are those which are required to meet peak demands at a certain location or local distribution system. The non-coincident maximum hour ratio for the sampled public customers is 4.04. Based on this result, the non-coincident hourly demand ratio for the public customer class is estimated at 4.0.

UNITED WATER PENNSYLVANIA INC.

SUMMARY OF NON-COINCIDENT AND COINCIDENT MAXIMUM DAY RATIOS
DURING THE PERIOD AUGUST 2010 THROUGH MARCH 2011

PUBLIC CUSTOMERS

Account Number (1)	Type (2)	System (3)	Recorder Type (4)	Average Day, Gallons * (5)	Maximum Day		
					Usage (6)	Date (7)	Ratio (8)
999-997-400	School	HBG	100W	4,624	14,000	1/19/2011	3.03
999-770-173	School	HBG	100W	2,762	4,500	8/31/2010	1.63
999-998-203	Prison	HBG	100W	95,838	136,000	8/26/2010	1.42
999-998-181	Prison	HBG	100W	24,759	50,000	8/26/2010	2.02
999-998-247	Detention Center & Offices	HBG	OMNI	5,452	6,148	8/7/2010	1.13
998-513-269	College	HBG	OMNI	2,865	6,592	11/11/2010	2.30
999-618-769	Prison	BLOOM	100W	13,025	18,500	1/25/2011	1.42
999-525-720	WW Treatment Plant	MECH	100W	1,861	8,200	3/16/2011	4.41
999-478-134	WW Treatment Plant	MECH	100W	77	470	2/16/2011	6.13
999-478-332	College	MECH	100W	16,816	92,500	12/7/2010	5.50
Non-Coincident Demand				168,078	336,910		2.00
Coincident Demand				163,378 **	242,297 **	9/24/2010	1.48

* Average day based on billed consumption for the 12 months of 2010 with the following exception: Mechanicsburg Disposal Plant uses billed consumption from May 2010 through Feb 2011.

** Excludes customers # 999-997-400 and 999-478-134 because they have no recorded data on this date (9/24/2010).

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UNITED WATER PENNSYLVANIA INC.
SUMMARY OF MAXIMUM HOUR RATIOS
DURING THE PERIOD AUGUST 2010 THROUGH MARCH 2011
PUBLIC CUSTOMERS

Account Number	Type	System	Recorder Type	Average Hour, Gallons	Maximum Hour Usage			Max Hour Ratio
					Gallons	Date	Hour	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
999-997-400	School	HBG	100W	193	1,500	12/3/10	1:00 PM	7.79
999-770-173	School	HBG	100W	115	600	1/20/11	1:00 PM	5.21
999-998-203	Prison	HBG	100W	3,993	8,000	8/26/10	12:00 PM	2.00
999-998-181	Prison	HBG	100W	1,032	5,000	8/26/10	1:00 AM	4.85
999-998-247	Detention Center & Offices	HBG	OMNI	227	884	8/3/10	6:00 PM	3.89
998-513-269	College	HBG	OMNI	119	1,247	8/4/10	7:00 AM	10.45
999-618-769	Prison	BLOOM	100W	543	2,800	12/31/10	7:00 PM	5.16
999-525-720	WW Treatment Plant	MECH	100W	78	400	3/16/11	11:00 PM	5.16
999-478-134	WW Treatment Plant	MECH	100W	3	360	2/16/11	12:00 AM	112.63
999-478-332	College	MECH	100W	701	7,500	9/24/10	5:00 PM	10.70
Non-Coincident Demand				7,003	28,291			4.04

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SUEZ WATER PENNSYLVANIA INC.
WATER UTILITIES

*RESPONSES TO RATE STRUCTURE AND COST OF SERVICE
FILING REQUIREMENTS*

1. Provide a complete, fully allocated, cost of service study if an interval of 3 years has passed between a previous cost of service study and the historic test year date of the current filing. The cost of service study shall provide the necessary data to determine if the water or wastewater rate structure is fair and equitable to all classifications of water or wastewater customers (including public and private fire protection customers) and reflects, as nearly as possible, the cost of providing the service. The study shall correspond to the test year proposed revenue requirements (future test year only, if used). Summaries of conclusions and all back-up calculations shall be made part of the submission of the cost of service study, and shall include the following:
 - d. Explain thoroughly the methodology employed if the company distinguishes between transmission and distribution or collection mains in its allocation of costs.

RESPONSE

For cost allocation purposes, mains that are 12-inch and larger are considered to be transmission mains and are allocated using Factor 3, which is based on average and maximum day extra capacity demands plus the daily requirement for fire demand. Mains sized under 12-inch are considered distribution mains and are allocated using Factor 4, which is based on average and maximum hour extra capacity demands plus the hourly requirement for fire demands.

SUEZ WATER PENNSYLVANIA INC.
WATER UTILITIES

*RESPONSES TO RATE STRUCTURE AND COST OF SERVICE
FILING REQUIREMENTS*

1. Provide a complete, fully allocated, cost of service study if an interval of 3 years has passed between a previous cost of service study and the historic test year date of the current filing. The cost of service study shall provide the necessary data to determine if the water or wastewater rate structure is fair and equitable to all classifications of water or wastewater customers (including public and private fire protection customers) and reflects, as nearly as possible, the cost of providing the service. The study shall correspond to the test year proposed revenue requirements (future test year only, if used). Summaries of conclusions and all back-up calculations shall be made part of the submission of the cost of service study, and shall include the following:
 - e. Provide a detailed explanation of how storage is utilized to meet base, maximum day and maximum hour demands.

RESPONSE

In any water system, distribution storage is generally used to meet base load, maximum day, and peak hour demands. Generally, peak hour demands control the design of distribution storage facilities. However, meeting peak hour implies that there is some contribution to meeting maximum day demands. Further, base load demands can also be met through distribution storage, particularly in emergency situations.

SUEZ WATER PENNSYLVANIA INC.
WATER UTILITIES

*RESPONSES TO RATE STRUCTURE AND COST OF SERVICE
FILING REQUIREMENTS*

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 - f. Provide workpapers, calculations and supporting documentation which develop the equivalent meters and equivalent service line weights reflected in the company's cost of service study.

RESPONSE

The 5/8-inch dollar equivalent was developed using actual installation costs by meter size, provided by the Company, as follows:

<u>Meter Size</u>	<u>Actual Installation Cost</u>	<u>5/8-Inch Dollar Equivalent</u>
5/8"	\$ 194.99	1.0
1"	305.45	1.6
1-1/2"	962.43	4.9
2"	1,165.24	6.0
3"	1,760.71	9.0
4"	2,640.14	13.5
6"	4,367.79	22.4
8"	6,047.37	32.8

SUEZ WATER PENNSYLVANIA INC.
WATER UTILITIES

*RESPONSES TO RATE STRUCTURE AND COST OF SERVICE
FILING REQUIREMENTS*

1f. cont.

The 3/4-inch dollar equivalent for 3/4" to 4" services was developed using the actual installation costs by size, provided by the Company. Greater than 4" service size ratios were developed from Gannett Fleming estimates.

<u>Service Size</u>	<u>Actual Installation Cost</u>	<u>1-Inch Equivalent</u>
3/4"	\$2,117.60	1.00
1"	2,708.96	1.28
2"	2,939.06	1.39
4"	4,625.37	2.18

SUEZ WATER PENNSYLVANIA INC.
WATER UTILITIES

*RESPONSES TO RATE STRUCTURE AND COST OF SERVICE
FILING REQUIREMENTS*

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 - g. Provide all workpapers and supporting documentation for the fire flow requirement and duration utilized in the cost of service study.

RESPONSE

The source for the estimated fire protection demand of 10,000 gpm is published fire flow criteria for the population served.

General fire-fighting requirements, based on population established by the National Board of Fire Underwriters, are as follows:

- a) For populations of 200,000 or less, $Q = 1020 \sqrt{P} (1 - 0.01\sqrt{P})$ where Q is the fire draft in gpm and P is the population in thousands.
- b) For populations in excess of 200,000, Q = 12,000 gpm plus 2,000 to 8,000 gpm for a potential second fire.

Inasmuch as the Company serves a population of approximately 140,000, the fire flow of 10,000 gpm would apply.

The foregoing requirements were published in Volume I, "Water and Wastewater Engineering," by Fair, Geyer & Okon, published in 1966 by John Wiley & Sons, Inc.

The required fire flow duration is ten hours.

SUEZ WATER PENNSYLVANIA INC.
WATER UTILITIES

*RESPONSES TO RATE STRUCTURE AND COST OF SERVICE
FILING REQUIREMENTS*

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 - h. Provide a breakdown of the number and size of private fire services according to the general water service class of customer.

RESPONSE

Please refer to SWPA Exhibit No. PRH-1.

SUEZ WATER PENNSYLVANIA INC.
WATER UTILITIES

*RESPONSES TO RATE STRUCTURE AND COST OF SERVICE
FILING REQUIREMENTS*

1. Provide a complete, fully allocated, cost of service study if an interval of 3 years has passed between a previous cost of service study and the historic test year date of the current filing. The cost of service study shall provide the necessary data to determine if the water or wastewater rate structure is fair and equitable to all classifications of water or wastewater customers (including public and private fire protection customers) and reflects, as nearly as possible, the cost of providing the service. The study shall correspond to the test year proposed revenue requirements (future test year only, if used). Summaries of conclusions and all back-up calculations shall be made part of the submission of the cost of service study, and shall include the following:
 - i. Provide a calculation of the company's base cost of water or wastewater per unit of consumption or usage.

RESPONSE

Base Cost of Water (See attached functional allocation)	\$23,645,003
Pro forma Water Consumption (1000 gallons)	4,311,361
Base cost per 1000 gallons	\$5.484

SUEZ WATER PENNSYLVANIA INC.

COST OF SERVICE FOR THE TWELVE MONTHS ENDED OCTOBER 31, 2016, ALLOCATED TO COST FUNCTIONS

<u>Account</u>		<u>Cost of Service</u>	<u>Base</u>	<u>Max Day</u>	<u>Max Hour</u>	<u>Meters</u>	<u>Services</u>	<u>Billing & Collecting</u>	<u>Fire Service</u>
OPERATION AND MAINTENANCE EXPENSES									
SOURCE OF SUPPLY EXPENSES									
Employee Salaries	2	525,412	401,310	121,265	0	0	0	0	2,837
Purchased Water	1	182,928	181,629	0	0	0	0	0	1,299
Purchased Water - Mahoning	1	360,835	358,273	0	0	0	0	0	2,562
Purchased Power	1	724,633	719,489	0	0	0	0	0	5,145
Purchased Power - Mahoning	1	11,510	11,428	0	0	0	0	0	82
Fuel for Power Production	1	2,099	2,084	0	0	0	0	0	15
Material and Supplies	2	2,727	2,083	629	0	0	0	0	15
Outside Services	2	16,557	12,646	3,821	0	0	0	0	89
Outside Services - Mahoning	2	699	534	161	0	0	0	0	4
Rental of Building/Real Property	2	0	0	0	0	0	0	0	0
Transportation Expense	2	18,323	13,995	4,229	0	0	0	0	99
Fringe Benefits	2	72,542	55,407	16,743	0	0	0	0	392
Miscellaneous Other	2	0	0	0	0	0	0	0	0
Office Expenses and Utilities	2	2,321	1,773	536	0	0	0	0	13
Uniforms	2	0	0	0	0	0	0	0	0
TOTAL SOURCE OF SUPPLY EXPENSE - OPERATION		1,920,586	1,760,651	147,384	0	0	0	0	12,551
Employee Salaries	2	102,994	78,667	23,771	0	0	0	0	556
Fuel for Power Production	1	0	0	0	0	0	0	0	0
Material and Supplies	2	6,066	4,633	1,400	0	0	0	0	33
Outside Services	2	145,795	111,358	33,649	0	0	0	0	787
Outside Services - Mahoning	2	6,159	4,704	1,421	0	0	0	0	33
Uniforms	2	0	0	0	0	0	0	0	0
Transportation Expense	2	46,087	35,201	10,637	0	0	0	0	249
Miscellaneous Other	2	177,106	135,274	40,876	0	0	0	0	956
TOTAL SOURCE OF SUPPLY EXPENSE - MAINTENANCE		484,207	369,837	111,755	0	0	0	0	2,615
TOTAL SS EXPENSE		2,404,793	2,130,488	259,139	0	0	0	0	15,165
WATER TREATMENT									
Employee Salaries	2	1,349,053	1,030,407	311,361	0	0	0	0	7,285
Purchased Power	1	(19,256)	(19,120)	0	0	0	0	0	(137)
Purchased Power - Mahoning	1	(306)	(304)	0	0	0	0	0	(2)
Chemicals	1	599,527	595,270	0	0	0	0	0	4,257
Membranes - Bloomsburg	2	0	0	0	0	0	0	0	0
Maintenance - Bloomsburg	2	0	0	0	0	0	0	0	0
Material and Supplies	2	8,723	6,662	2,013	0	0	0	0	47
Testing	2	83,542	63,809	19,281	0	0	0	0	451
Outside Services	2	288,711	220,518	66,635	0	0	0	0	1,559
Outside Services - Mahoning	2	12,196	9,315	2,815	0	0	0	0	66
Transportation Expense	2	133,249	101,776	30,754	0	0	0	0	720
Fringe Benefits	2	525,755	401,572	121,344	0	0	0	0	2,839
Miscellaneous Other	2	561	428	129	0	0	0	0	3

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SUEZ WATER PENNSYLVANIA INC.

COST OF SERVICE FOR THE TWELVE MONTHS ENDED OCTOBER 31, 2016, ALLOCATED TO COST FUNCTIONS

<u>Account</u>		<u>Cost of Service</u>	<u>Base</u>	<u>Max Day</u>	<u>Max Hour</u>	<u>Meters</u>	<u>Services</u>	<u>Billing & Collecting</u>	<u>Fire Service</u>
Communication Services	2	0	0	0	0	0	0	0	0
Uniforms, Travel, Rentals and Other	2	6,595	5,038	1,522	0	0	0	0	36
TOTAL WATER TREATMENT EXPENSE - OPERATION		2,988,349	2,415,371	555,855	0	0	0	0	17,123
Employee Salaries	2	297,234	227,027	68,602	0	0	0	0	1,605
Fuel for Power Production	1	(1,070)	(1,062)	0	0	0	0	0	(8)
Chemicals	1	0	0	0	0	0	0	0	0
Material and Supplies	2	166,642	127,281	38,461	0	0	0	0	900
Outside Services	2	113,417	86,628	26,177	0	0	0	0	612
Outside Services - Mahoning	2	4,791	3,659	1,106	0	0	0	0	26
Rental of Equipment	2	0	0	0	0	0	0	0	0
Transportation Expense	2	30,450	23,258	7,028	0	0	0	0	164
Fringe Benefits	2	117,977	90,111	27,229	0	0	0	0	637
Miscellaneous Other	2	0	0	0	0	0	0	0	0
Office Expense and Utilities	2	48,038	36,691	11,087	0	0	0	0	259
Uniforms and Travel	2	0	0	0	0	0	0	0	0
TOTAL WT EXPENSE - MAINTENANCE		777,479	593,593	179,689	0	0	0	0	4,197
TOTAL WT EXPENSE		3,765,828	3,008,964	735,544	0	0	0	0	21,320
TRANSMISSION AND DISTRIBUTION EXPENSES									
Employee Salaries - Supervision	10	35,839	11,855	1,122	6,566	7,978	0	0	8,318
Employee Salaries - Lines	6	495,291	210,746	19,960	116,691	0	0	0	147,894
Employee Salaries - Meters	8	141,836	0	0	0	141,836	0	0	0
Purchased Power	1	865,311	859,167	0	0	0	0	0	6,144
Purchased Power - Mahoning	1	13,744	13,647	0	0	0	0	0	98
Material and Supplies	10	8,218	2,719	257	1,506	1,829	0	0	1,907
Outside Services	10	91,070	30,126	2,850	16,684	20,272	0	0	21,137
Outside Services - Mahoning	10	3,847	1,273	120	705	856	0	0	893
Rentals of Building/Real Property	10	12,710	4,205	398	2,329	2,829	0	0	2,950
Transportation Expense	10	67,140	22,210	2,101	12,300	14,945	0	0	15,583
Fringe Benefits	10	264,039	87,344	8,264	48,372	58,775	0	0	61,284
Miscellaneous Other	10	0	0	0	0	0	0	0	0
Communication Services	10	0	0	0	0	0	0	0	0
Office Expense, Utilities and Other	10	1,300	430	41	238	289	0	0	302
Uniforms, Dues and Rentals	10	74,089	24,509	2,319	13,573	16,492	0	0	17,196
TOTAL T & D EXPENSE OPERATION		2,074,434	1,268,230	37,434	218,962	266,103	0	0	283,706
Employee Salaries - Supervision	11	40,816	13,510	1,269	7,502	0	6,408	0	12,126
Employee Salaries - Structures and Improvements	11	121,220	40,124	3,770	22,280	0	19,032	0	36,015
Employee Salaries - Reservoirs and Standpipes	5	2,653	1,104	0	890	0	0	0	659
Employee Salaries - Mains	6	366,505	155,948	14,770	86,349	0	0	0	109,438
Employee Salaries - Services	9	77,155	0	0	0	0	74,524	0	2,631
Employee Salaries - Hydrants	7	28,272	0	0	0	0	0	0	28,272
Employee Salaries - Miscellaneous Plant	11	20,714	6,856	644	3,807	0	3,252	0	6,154
Fuel for Power Production	1	0	0	0	0	0	0	0	0

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SUEZ WATER PENNSYLVANIA INC.

COST OF SERVICE FOR THE TWELVE MONTHS ENDED OCTOBER 31, 2016, ALLOCATED TO COST FUNCTIONS

<u>Account</u>	<u>Cost of Service</u>	<u>Base</u>	<u>Max Day</u>	<u>Max Hour</u>	<u>Meters</u>	<u>Services</u>	<u>Billing & Collecting</u>	<u>Fire Service</u>
Material and Supplies	11 89,550	29,641	2,785	16,459	0	14,059	0	26,605
Outside Services	11 32,906	10,892	1,023	6,048	0	5,166	0	9,776
Outside Services - Mahoning	11 1,390	460	43	255	0	218	0	413
Rental of Equipment	11 0	0	0	0	0	0	0	0
Transportation Expense	11 67,461	22,330	2,098	12,399	0	10,591	0	20,043
Fringe Benefits	11 261,258	86,476	8,125	48,019	0	41,018	0	77,620
Miscellaneous Other	11 0	0	0	0	0	0	0	0
Office Expense and Utilities	11 606	201	19	111	0	95	0	180
Uniforms	11 0	0	0	0	0	0	0	0
TOTAL T & D EXPENSE - MAINTENANCE	1,110,507	367,542	34,547	204,121	0	174,364	0	329,933
TOTAL T & D EXPENSE	3,184,941	1,635,772	71,981	423,083	266,103	174,364	0	613,638
CUSTOMER ACCOUNTS								
Employee Salaries - Supervision	12 1,405	0	0	0	0	0	1,374	31
Employee Salaries - Meter Reading	13 177,426	0	0	0	0	0	177,426	0
Employee Salaries - Billing	12 591,171	0	0	0	0	0	578,107	13,065
Fuel for Power Production	12 (91)	0	0	0	0	0	(89)	(2)
Material and Supplies	12 1,363	0	0	0	0	0	1,333	30
Outside Services	12 280,057	0	0	0	0	0	273,868	6,189
Outside Services - Mahoning	12 5,494	0	0	0	0	0	5,372	121
Rentals of Building/Real Property	12 0	0	0	0	0	0	0	0
Rental of Equipment	12 (490)	0	0	0	0	0	(479)	(11)
Transportation Expense	12 78,984	0	0	0	0	0	77,238	1,746
Advertising	12 0	0	0	0	0	0	0	0
Bad Debt Expense	12 190,805	0	0	0	0	0	186,588	4,217
Fringe Benefits	12 309,379	0	0	0	0	0	302,542	6,837
Miscellaneous Other	12 218	0	0	0	0	0	213	5
Communication Services	12 0	0	0	0	0	0	0	0
Office Expense, Utilities and Other	12 (1,108)	0	0	0	0	0	(1,083)	(24)
Uniforms	12 0	0	0	0	0	0	0	0
Postage	12 366,358	0	0	0	0	0	358,262	8,097
TOTAL CUSTOMER ACCOUNTING EXPENSE	2,000,972	0	0	0	0	0	1,960,672	40,300
ADMINISTRATIVE AND GENERAL EXPENSES								
Employee Salaries	14 1,083,945	509,996	134,192	53,222	33,494	21,896	246,706	84,439
Employee Pension & Benefits	16 2,604,660	1,282,274	334,438	141,954	87,517	59,647	478,736	220,094
Purchased Power	14 22,759	10,708	2,818	1,117	703	460	5,180	1,773
Accounting	14 0	0	0	0	0	0	0	0
Legal	14 0	0	0	0	0	0	0	0
Management Fees- Engineering	18 291,817	113,283	53,344	22,499	16,925	31,575	5,457	48,733
Management Fees- Customer Related	12 385,703	0	0	0	0	0	377,179	8,524
Management Fees- Employee related	16 303,900	149,610	39,021	16,563	10,211	6,959	55,857	25,680
Management Fees- Other	14 4,378,078	2,059,886	542,006	214,964	135,283	88,437	996,450	341,052
Outside Services	14 246,794	116,117	30,553	12,118	7,626	4,985	56,170	19,225
Outside Services - Mahoning	14 10,425	4,905	1,291	512	322	211	2,373	812

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SUEZ WATER PENNSYLVANIA INC.

COST OF SERVICE FOR THE TWELVE MONTHS ENDED OCTOBER 31, 2016, ALLOCATED TO COST FUNCTIONS

Account		Cost of Service	Base	Max Day	Max Hour	Meters	Services	Billing & Collecting	Fire Service
Rental of Building/Real Property	14	60,451	28,442	7,484	2,968	1,868	1,221	13,759	4,709
Rental of Equipment	14	39,180	18,434	4,850	1,924	1,211	791	8,917	3,052
Transportation Expense	14	118,628	55,815	14,686	5,825	3,666	2,396	27,000	9,241
Insurance - General Liability	14	4,935	2,322	611	242	152	100	1,123	384
Insurance -Workman's Compensation	14	110,717	52,092	13,707	5,436	3,421	2,236	25,199	8,625
Advertising	14	3,674	1,729	455	180	114	74	836	286
Rate Case Expense - Amort	18	189,000	73,370	34,549	14,572	10,962	20,450	3,534	31,563
Regulatory Commission Expense	18	270,077	104,844	49,370	20,823	15,664	29,222	5,050	45,103
Fringe Benefits	16	(2,834,345)	(1,395,348)	(363,930)	(154,472)	(95,234)	(64,906)	(520,953)	(239,502)
Miscellaneous Other - Transfer Fringe Benefits	16	48,767	24,008	6,262	2,658	1,639	1,117	8,963	4,121
Membership Dues	14	0	0	0	0	0	0	0	0
Reg Fees for Conventions	14	0	0	0	0	0	0	0	0
Communication Services	14	0	0	0	0	0	0	0	0
Office Expenses and Utilities	14	482,593	227,060	59,745	23,695	14,912	9,748	109,838	37,594
Uniforms, Materials and Supplies and Other	14	81,002	38,111	10,028	3,977	2,503	1,636	18,436	6,310
Postage	14	0	0	0	0	0	0	0	0
Subscriptions	14	0	0	0	0	0	0	0	0
Travel	14	0	0	0	0	0	0	0	0
TOTAL A & G EXPENSE		7,902,760	3,477,658	975,480	390,777	252,958	218,255	1,925,812	661,819
Total Operation & Maintenance Expenses		19,259,294	10,252,882	2,042,145	813,860	519,061	392,619	3,886,484	1,352,243
DEPRECIATION EXPENSE									
Water Source Structures	2	82,824	63,261	19,116	0	0	0	0	447
Collection and Impounding Reservoirs	1	7,983	7,926	0	0	0	0	0	57
Lakes, River and Other Intakes	2	214,637	163,940	49,538	0	0	0	0	1,159
Wells & Springs	2	18,004	13,751	4,155	0	0	0	0	97
Infiltration Galleries and Tunnels	2	400	306	92	0	0	0	0	2
Purification Buildings	2	472,455	360,861	109,043	0	0	0	0	2,551
Power Generation Equip	3	0	0	0	0	0	0	0	0
Electric Pumping Equipment	3	597,839	359,540	108,627	0	0	0	0	129,671
Oil Engine Pumping Equipment	3	3,833	2,305	696	0	0	0	0	831
Purification System - Treatment Structures	2	868,536	663,388	200,458	0	0	0	0	4,690
Purification System - Painting	2	39,209	29,948	9,049	0	0	0	0	212
Purification System - Chemical Treatment	2	598,011	456,761	138,021	0	0	0	0	3,229
Laboratory Equipment	2	4,514	3,448	1,042	0	0	0	0	24
T&D Structures and Improvements	6	12,150	5,170	490	2,863	0	0	0	3,628
Distribution Reservoirs and Standpipes	5	396,205	164,901	0	132,887	0	0	0	98,417
Distribution Mains	4	1,204,094	0	452,137	364,479	0	0	0	387,477
Transmission Mains	3	1,081,270	650,276	196,467	0	0	0	0	234,528
Services	9	720,889	0	0	0	0	696,307	0	24,582
Meters	8	976,632	0	0	0	976,632	0	0	0
Hydrants	7	128,185	0	0	0	0	0	0	128,185
General Land and Land Rights	14	6,374	2,999	789	313	197	129	1,451	497

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SUEZ WATER PENNSYLVANIA INC.

COST OF SERVICE FOR THE TWELVE MONTHS ENDED OCTOBER 31, 2016, ALLOCATED TO COST FUNCTIONS

<u>Account</u>		<u>Cost of Service</u>	<u>Base</u>	<u>Max Day</u>	<u>Max Hour</u>	<u>Meters</u>	<u>Services</u>	<u>Billing & Collecting</u>	<u>Fire Service</u>
Office Buildings	14	239,971	112,906	29,708	11,783	7,415	4,847	54,617	18,694
Stores, Shop and Garage Buildings	14	178,839	84,144	22,140	8,781	5,526	3,613	40,704	13,932
Miscellaneous Structures and Improvements	14	17,015	8,006	2,106	835	526	344	3,873	1,325
Other Plant and Miscellaneous Equipment	14	8,424	3,963	1,043	414	260	170	1,917	656
Office Furniture and Equipment	14	33,217	15,629	4,112	1,631	1,026	671	7,560	2,588
Computer Software	14	80,761	37,998	9,998	3,965	2,496	1,631	18,381	6,291
Computer Software-CIS Implementation	12	5,653	0	0	0	0	0	5,528	125
Transportation Equipment	14	215	101	27	11	7	4	49	17
Stores Equipment	14	0	0	0	0	0	0	0	0
Tools and work Equipment	14	48,767	22,945	6,037	2,394	1,507	985	11,099	3,799
Shop Equipment	14	109,759	51,642	13,588	5,389	3,392	2,217	24,981	8,550
Power Operated Equipment	14	0	0	0	0	0	0	0	0
Communication Equipment	14	555,964	261,581	68,828	27,298	17,179	11,230	126,537	43,310
Miscellaneous Equipment	14	10,332	4,861	1,279	507	319	209	2,352	805
Total Depreciation Expense		8,722,962	3,552,556	1,448,589	563,550	1,016,482	722,357	299,050	1,120,377
Amortization of Acquisition Adjustment	18	57,744	22,416	10,556	4,452	3,349	6,248	1,080	9,643
Amortization of Regulatory Liability	18	(265,198)	(102,950)	(48,478)	(20,447)	(15,381)	(28,694)	(4,959)	(44,288)
Taxes Other Than Income									
Real Estate	18	318,178	123,517	58,163	24,532	18,454	34,427	5,950	53,136
Payroll Taxes	16	650,213	320,100	83,487	35,437	21,847	14,890	119,509	54,943
Total Taxes, Other Than Income		968,391	443,617	141,650	59,968	40,301	49,317	125,459	108,079
Income Taxes	18	5,519,128	2,142,526	1,008,897	425,525	320,109	597,170	103,208	921,694
Utility Income Available for Return	18	19,356,334	7,514,129	3,538,338	1,492,373	1,122,667	2,094,355	361,963	3,232,508
Total Cost of Service		53,618,655	23,825,175	8,141,696	3,339,282	3,006,589	3,833,372	4,772,285	6,700,256
Less: Other Water Revenues	19	405,611	180,172	61,653	25,270	22,755	29,042	35,978	50,742
Total Cost of Service Related to Sales of Water		53,213,044	23,645,003	8,080,043	3,314,012	2,983,834	3,804,330	4,736,307	6,649,514
Reallocation of Public Fire	20	0	0	0	0	3,438,063	0	0	(3,438,063)
Total		\$ 53,213,044	\$ 23,645,003	\$ 8,080,043	\$ 3,314,012	\$ 6,421,897	\$ 3,804,330	\$ 4,736,307	\$ 3,211,451

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SUEZ WATER PENNSYLVANIA INC.

COST OF SERVICE FOR THE TWELVE MONTHS ENDED OCTOBER 31, 2016, ALLOCATED TO COST FUNCTIONS

<u>Account</u>		<u>Cost of Service</u>	<u>Base</u>	<u>Max Day</u>	<u>Max Hour</u>	<u>Meters</u>	<u>Services</u>	<u>Billing & Collecting</u>	<u>Fire Service</u>
RATE BASE									
Organization	17	(85,780)	(33,257)	(15,715)	(6,622)	(4,984)	(9,316)	(1,510)	(14,377)
Franchises and Consents	17	64,266	24,916	11,773	4,961	3,734	6,979	1,131	10,771
Source of Supply - Land and Land Rights	2	469,867	358,885	108,445	0	0	0	0	2,537
Water Source Structures	2	2,327,346	1,777,627	537,152	0	0	0	0	12,568
Collection and Impounding Reservoirs	1	318,763	316,500	0	0	0	0	0	2,263
Lakes, River and Other Intakes	2	5,328,927	4,070,235	1,229,916	0	0	0	0	28,776
Wells & Springs	2	482,753	368,727	111,419	0	0	0	0	2,607
Infiltration Galleries and Tunnels	2	10,501	8,021	2,424	0	0	0	0	57
Water Treatment - Land and Land Rights	2	1,234,766	943,114	284,984	0	0	0	0	6,668
Purification Buildings	2	14,392,820	10,993,236	3,321,863	0	0	0	0	77,721
Power Generation Equip	3	0	0	0	0	0	0	0	0
Electric Pumping Equipment	3	10,681,671	6,423,957	1,940,860	0	0	0	0	2,316,854
Oil Engine Pumping Equipment	3	59,336	35,684	10,781	0	0	0	0	12,870
Purification System - Treatment Structures	2	23,361,387	17,843,427	5,391,808	0	0	0	0	126,151
Purification System - Painting	2	184,863	141,198	42,666	0	0	0	0	998
Purification System - Chemical Treatment	2	7,238,782	5,528,982	1,670,711	0	0	0	0	39,089
Laboratory Equipment	2	34,224	26,140	7,899	0	0	0	0	185
T&D - Land and Land Rights	6	1,893,254	805,580	76,298	446,051	0	0	0	565,326
T&D Structures and Improvements	6	388,263	165,206	15,647	91,475	0	0	0	115,935
Distribution Reservoirs and Standpipes	5	9,566,933	3,981,757	0	3,208,749	0	0	0	2,376,426
Distribution Mains	4	50,938,186	0	19,127,289	15,418,989	0	0	0	16,391,908
Transmission Mains	3	62,948,574	37,857,273	11,437,756	0	0	0	0	13,653,546
Services	9	28,929,900	0	0	0	0	27,943,391	0	986,510
Meters	8	14,543,019	0	0	0	14,543,019	0	0	0
Hydrants	7	5,434,893	0	0	0	0	0	0	5,434,893
Other Plant and Miscellaneous Equipment	14	151,899	71,469	18,805	7,458	4,694	3,068	34,572	11,833
General Land and Land Rights	14	961,927	452,587	119,087	47,231	29,724	19,431	218,935	74,934
Office Buildings	14	9,238,720	4,346,818	1,143,754	453,621	285,476	186,622	2,102,733	719,696
Stores, Shop and Garage Buildings	14	3,711,277	1,746,156	459,456	182,224	114,678	74,968	844,687	289,108
Miscellaneous Structures and Improvements	14	169,011	79,519	20,924	8,298	5,222	3,414	38,467	13,166
Office Furniture and Equipment	14	355,574	167,298	44,020	17,459	10,987	7,183	80,929	27,699
Computer Software	14	95,772	45,061	11,857	4,702	2,959	1,935	21,798	7,461
Computer Software-CIS Implementation	12	5,653	0	0	0	0	0	5,528	125
Transportation Equipment	14	528	249	65	26	16	11	120	41
Stores Equipment	14	0	0	0	0	0	0	0	0
Tools and work Equipment	14	737,438	346,965	91,295	36,208	22,787	14,896	167,841	57,446
Shop Equipment	14	1,411,787	664,246	174,779	69,319	43,624	28,518	321,323	109,978
Power Operated Equipment	14	0	0	0	0	0	0	0	0
Communication Equipment	14	3,219,677	1,514,858	398,596	158,086	99,488	65,037	732,798	250,813
Miscellaneous Equipment	14	107,479	50,569	13,306	5,277	3,321	2,171	24,462	8,373
Plant Held for Future Use	2	0	0	0	0	0	0	0	0
Total Utility Plant in Service		260,914,256	101,122,999	47,809,919	20,153,512	15,164,747	28,348,308	4,593,813	43,720,957

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SUEZ WATER PENNSYLVANIA INC.

COST OF SERVICE FOR THE TWELVE MONTHS ENDED OCTOBER 31, 2016, ALLOCATED TO COST FUNCTIONS

<u>Account</u>		<u>Cost of Service</u>	<u>Base</u>	<u>Max Day</u>	<u>Max Hour</u>	<u>Meters</u>	<u>Services</u>	<u>Billing & Collecting</u>	<u>Fire Service</u>
Other Rate Base Items									
Add:									
Cash Working Capital	15	863,746	464,954	88,879	35,241	22,198	14,511	180,696	57,266
Materials and Supplies	14	481,594	226,590	59,621	23,646	14,881	9,728	109,611	37,516
Less									
Deferred Income Taxes	17	(18,810,736)	(7,292,922)	(3,446,127)	(1,452,189)	(1,092,904)	(2,042,846)	(331,069)	(3,152,679)
Total Other Rate Base Elements		<u>(17,465,396)</u>	<u>(6,601,378)</u>	<u>(3,297,626)</u>	<u>(1,393,302)</u>	<u>(1,055,824)</u>	<u>(2,018,607)</u>	<u>(40,763)</u>	<u>(3,057,897)</u>
Total Original Cost Measure of Value		<u>\$ 243,448,860</u>	<u>\$ 94,521,621</u>	<u>\$ 44,512,293</u>	<u>\$ 18,760,211</u>	<u>\$ 14,108,923</u>	<u>\$ 26,329,701</u>	<u>\$ 4,553,050</u>	<u>\$ 40,663,060</u>

SUEZ WATER PENNSYLVANIA INC.
WATER UTILITIES

*RESPONSES TO RATE STRUCTURE AND COST OF SERVICE
FILING REQUIREMENTS*

1. Provide a complete, fully allocated, cost of service study if an interval of 3 years has passed between a previous cost of service study and the historic test year date of the current filing. The cost of service study shall provide the necessary data to determine if the water or wastewater rate structure is fair and equitable to all classifications of water or wastewater customers (including public and private fire protection customers) and reflects, as nearly as possible, the cost of providing the service. The study shall correspond to the test year proposed revenue requirements (future test year only, if used). Summaries of conclusions and all back-up calculations shall be made part of the submission of the cost of service study, and shall include the following:
 - j. Provide a detailed cost analysis that supports the company's customer charges, by meter size, showing all direct and indirect costs included.

RESPONSE

Please refer to Schedule H of SWPA Exhibit No. PRH-1.

SUEZ WATER PENNSYLVANIA INC.
WATER UTILITIES

*RESPONSES TO RATE STRUCTURE AND COST OF SERVICE
FILING REQUIREMENTS*

2. Provide a listing of negotiated special rate contracts which includes a comparison of revenues under special rate contracts and under tariff rates. Provide the cost of service treatment of any deficiency in revenues resulting from the negotiated special rate contracts. Special rates are defined as rates not contained in the currently effective tariff.

RESPONSE

SUEZ Water Pennsylvania does not have any special rate contracts.

SUEZ WATER PENNSYLVANIA INC.

HARRISBURG, PENNSYLVANIA

COST OF SERVICE STUDY
EXCLUDING TRUNK LINE
FOR THE TEST YEAR ENDED
DECEMBER 31, 2019



Excellence Delivered As Promised

SUEZ WATER PENNSYLVANIA INC.

COMPARISON OF COST OF SERVICE WITH REVENUES UNDER PRESENT AND PROPOSED RATES
FOR THE TEST YEAR ENDED DECEMBER 31, 2019

Customer Classification (1)	Cost of Service Excluding Trunk Line		Revenues, Present Rates*		Revenues, Proposed Rates		Proposed Increase	
	Amount (2)	Percent (3)	Amount (4)	Percent (5)	Amount (6)	Percent (7)	Amount (8)	Percent Increase (9)
Residential	\$ 30,507,635	58.1%	\$ 29,216,168	62.4%	\$ 32,108,048	61.1%	\$ 2,891,880	9.9%
Commercial	14,437,837	27.5%	11,958,637	25.5%	13,867,879	26.4%	1,909,242	16.0%
Industrial	909,823	1.7%	766,289	1.6%	887,181	1.7%	120,892	15.8%
Large Industrial	1,273,220	2.4%	701,022	1.5%	853,358	1.6%	152,336	21.7%
Public Authority	2,297,142	4.4%	1,835,763	3.9%	2,168,692	4.1%	332,929	18.1%
Private Fire Service	2,151,347	4.1%	1,446,048	3.1%	1,691,887	3.2%	245,840	17.0%
Public Fire Service	1,008,895	1.9%	923,861	2.0%	1,008,895	1.9%	85,034	9.2%
Total Sales	52,585,900	<u>100.1%</u>	46,847,788	<u>100.0%</u>	52,585,940	<u>100.0%</u>	5,738,152	12.2%
Other Revenues	405,611		405,611		405,611		-	0.0%
Total	<u>\$ 52,991,510</u>		<u>\$ 47,253,398</u>		<u>\$ 52,991,551</u>		<u>\$ 5,738,152</u>	12.1%

* Includes DSIC Revenue.

SUEZ WATER PENNSYLVANIA INC.

COST OF SERVICE FOR THE TWELVE MONTHS ENDED DECEMBER 31, 2019, ALLOCATED TO CUSTOMER CLASSIFICATIONS

Account (1)	Factor Ref (2)	Cost of Service (3)	Fire Protection						
			Residential (4)	Commercial (5)	Industrial (6)	Large Industrial (7)	Public Authorities (8)	Private (9)	Public (10)
OPERATION AND MAINTENANCE EXPENSES									
SOURCE OF SUPPLY EXPENSES									
Employee Salaries	2	525,412	280,097	173,806	12,715	23,801	32,155	998	1,839
Purchased Water	1	182,928	97,610	60,567	4,262	7,994	11,195	457	841
Purchased Water - Mahoning	1	360,835	192,542	119,472	8,407	15,768	22,083	902	1,660
Purchased Power	1	724,633	386,664	239,926	16,884	31,666	44,348	1,812	3,333
Purchased Power - Mahoning	1	11,510	6,142	3,811	268	503	704	29	53
Fuel for Power Production	1	2,099	1,120	695	49	92	128	5	10
Material and Supplies	2	2,727	1,454	902	66	124	167	5	10
Outside Services	2	16,557	8,827	5,477	401	750	1,013	31	58
Outside Services - Mahoning	2	699	373	231	17	32	43	1	2
Rental of Building/Real Property	2	0	0	0	0	0	0	0	0
Transportation Expense	2	18,323	9,768	6,061	443	830	1,121	35	64
Fringe Benefits	2	72,542	38,672	23,997	1,756	3,286	4,440	138	254
Miscellaneous Other	2	0	0	0	0	0	0	0	0
Office Expenses and Utilities	2	2,321	1,237	768	56	105	142	4	8
Uniforms	2	0	0	0	0	0	0	0	0
TOTAL SOURCE OF SUPPLY EXPENSE - OPERATION		1,920,586	1,024,505	635,714	45,324	84,951	117,540	4,418	8,132
Employee Salaries	2	102,994	54,906	34,071	2,492	4,666	6,303	196	360
Fuel for Power Production	1	0	0	0	0	0	0	0	0
Material and Supplies	2	6,066	3,234	2,007	147	275	371	12	21
Outside Services	2	145,795	77,723	48,229	3,528	6,605	8,923	277	510
Outside Services - Mahoning	2	6,159	3,283	2,037	149	279	377	12	22
Uniforms	2	0	0	0	0	0	0	0	0
Transportation Expense	2	46,087	24,569	15,245	1,115	2,088	2,820	88	161
Fringe Benefits	2	177,106	94,415	58,587	4,286	8,023	10,839	337	620
Miscellaneous Other	2	0	0	0	0	0	0	0	0
TOTAL SOURCE OF SUPPLY EXPENSE - MAINTENANCE		484,207	258,131	160,176	11,718	21,935	29,633	920	1,695
TOTAL SOURCE OF SUPPLY EXPENSE		2,404,793	1,282,636	795,890	57,042	106,886	147,173	5,338	9,827
WATER TREATMENT									
Employee Salaries	2	1,349,053	719,180	446,267	32,647	61,112	82,562	2,563	4,722
Purchased Power	1	(19,256)	(10,275)	(6,376)	(449)	(842)	(1,178)	(48)	(89)
Purchased Power - Mahoning	1	(306)	(163)	(101)	(7)	(13)	(19)	(1)	(1)
Chemicals	1	599,527	319,908	198,503	13,969	26,199	36,691	1,499	2,758
Membranes - Bloomsburg	2	0	0	0	0	0	0	0	0
Maintenance - Bloomsburg	2	0	0	0	0	0	0	0	0
Material and Supplies	2	8,723	4,650	2,885	211	395	534	17	31
Testing	2	83,542	44,536	27,636	2,022	3,784	5,113	159	292
Outside Services	2	288,711	153,912	95,506	6,987	13,079	17,669	549	1,010
Outside Services - Mahoning	2	12,196	6,501	4,034	295	552	746	23	43
Transportation Expense	2	133,249	71,035	44,079	3,225	6,036	8,155	253	466
Fringe Benefits	2	525,755	280,280	173,920	12,723	23,817	32,176	999	1,840

SUEZ WATER PENNSYLVANIA INC.

COST OF SERVICE FOR THE TWELVE MONTHS ENDED DECEMBER 31, 2019, ALLOCATED TO CUSTOMER CLASSIFICATIONS

Account (1)	Factor Ref. (2)	Cost of Service (3)					Fire Protection		
			Residential (4)	Commercial (5)	Industrial (6)	Large Industrial (7)	Public Authorities (8)	Private (9)	Public (10)
Miscellaneous Other	2	561	299	185	14	25	34	1	2
Communication Services	2	0	0	0	0	0	0	0	0
Uniforms, Travel, Rentals and Other	2	6,595	3,516	2,182	160	299	404	13	23
TOTAL WATER TREATMENT EXPENSE - OPERATION		2,988,349	1,593,379	988,720	71,796	134,444	182,887	6,026	11,097
Employee Salaries	2	297,234	158,455	98,325	7,193	13,465	18,191	565	1,040
Fuel for Power Production	1	(1,070)	(571)	(354)	(25)	(47)	(65)	(3)	(5)
Chemicals	1	0	0	0	0	0	0	0	0
Material and Supplies	2	166,642	88,837	55,125	4,033	7,549	10,198	317	583
Outside Services	2	113,417	60,463	37,518	2,745	5,138	6,941	215	397
Outside Services - Mahoning	2	4,791	2,554	1,585	116	217	293	9	17
Rental of Equipment	2	0	0	0	0	0	0	0	0
Transportation Expense	2	30,450	16,233	10,073	737	1,379	1,864	58	107
Fringe Benefits	2	117,977	62,894	39,027	2,855	5,344	7,220	224	413
Miscellaneous Other	2	0	0	0	0	0	0	0	0
Office Expense and Utilities	2	48,038	25,609	15,891	1,163	2,176	2,940	91	168
Uniforms and Travel	2	0	0	0	0	0	0	0	0
TOTAL WATER TREATMENT EXPENSE - MAINTENANCE		777,479	414,474	257,190	18,816	35,222	47,582	1,477	2,720
TOTAL WATER TREATMENT EXPENSE		3,765,828	2,007,852	1,245,910	90,612	169,666	230,469	7,502	13,817
TRANSMISSION AND DISTRIBUTION EXPENSES									
Employee Salaries - Supervision	10	35,839	15,515	9,777	588	226	1,416	2,921	5,397
Employee Salaries - Lines	6	495,291	169,637	140,861	9,757	3,913	23,229	51,956	95,938
Employee Salaries - Meters	8	141,836	106,164	32,963	667	113	1,929	0	0
Purchased Power	1	865,311	461,730	286,504	20,162	37,814	52,957	2,163	3,980
Purchased Power - Mahoning	1	13,744	7,334	4,551	320	601	841	34	63
Material and Supplies	10	8,218	3,558	2,242	135	52	325	670	1,238
Outside Services	10	91,070	39,424	24,844	1,494	574	3,597	7,422	13,715
Outside Services - Mahoning	10	3,847	1,665	1,049	63	24	152	314	579
Rentals of Building/Real Property	10	12,710	5,502	3,467	208	80	502	1,036	1,914
Transportation Expense	10	67,140	29,065	18,316	1,101	423	2,652	5,472	10,111
Fringe Benefits	10	264,039	114,303	72,030	4,330	1,663	10,430	21,519	39,764
Miscellaneous Other	10	0	0	0	0	0	0	0	0
Communication Services	10	0	0	0	0	0	0	0	0
Office Expense, Utilities and Other	10	1,300	563	355	21	8	51	106	196
Uniforms, Dues and Rentals	10	74,089	32,073	20,211	1,215	467	2,927	6,038	11,158
TOTAL T & D EXPENSE OPERATION		2,074,434	986,532	617,170	40,061	45,958	101,007	99,651	184,054
Employee Salaries - Supervision	11	40,816	16,588	9,686	633	257	1,522	3,555	8,575
Employee Salaries - Structures and Improvements	11	121,220	49,264	28,766	1,879	764	4,522	10,558	25,468
Employee Salaries - Reservoirs and Standpipes	5	2,653	905	824	57	77	131	232	428
Employee Salaries - Mains	6	366,505	125,528	104,234	7,220	2,895	17,189	38,446	70,992
Employee Salaries - Services	9	77,155	66,492	7,553	93	8	370	2,639	0
Employee Salaries - Hydrants	7	28,272	0	0	0	0	0	0	28,272

SUEZ WATER PENNSYLVANIA INC.

COST OF SERVICE FOR THE TWELVE MONTHS ENDED DECEMBER 31, 2019, ALLOCATED TO CUSTOMER CLASSIFICATIONS

Account	Factor Ref.	Cost of Service	Fire Protection						
			Residential	Commercial	Industrial	Large Industrial	Public Authorities	Private	Public
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Employee Salaries - Miscellaneous Plant	11	20,714	8,418	4,915	321	130	773	1,804	4,352
Fuel for Power Production	1	0	0	0	0	0	0	0	0
Material and Supplies	11	89,550	36,393	21,250	1,388	564	3,340	7,800	18,815
Outside Services	11	32,906	13,373	7,809	510	207	1,227	2,866	6,913
Outside Services - Mahoning	11	1,390	565	330	22	9	52	121	292
Rental of Equipment	11	0	0	0	0	0	0	0	0
Transportation Expense	11	67,461	27,416	16,009	1,046	425	2,516	5,876	14,174
Fringe Benefits	11	261,258	106,175	61,997	4,050	1,646	9,745	22,756	54,890
Miscellaneous Other	11	0	0	0	0	0	0	0	0
Office Expense and Utilities	11	606	246	144	9	4	23	53	127
Uniforms	11	0	0	0	0	0	0	0	0
TOTAL T & D EXPENSE - MAINTENANCE		1,110,507	451,364	263,516	17,226	6,986	41,411	96,705	233,299
TOTAL T & D EXPENSE		3,184,941	1,437,896	880,686	57,287	52,944	142,418	196,357	417,353
CUSTOMER ACCOUNTS									
Employee Salaries - Supervision	12	1,405	1,255	112	1	0	5	31	1
Employee Salaries - Meter Reading	13	177,426	162,096	14,513	124	0	692	0	0
Employee Salaries - Billing	12	591,171	527,798	47,294	414	0	2,246	13,124	296
Fuel for Power Production	12	(91)	(82)	(7)	(0)	0	(0)	(2)	(0)
Material and Supplies	12	1,363	1,217	109	1	0	5	30	1
Outside Services	12	280,057	250,035	22,405	196	0	1,064	6,217	140
Outside Services - Mahoning	12	5,494	4,905	440	4	0	21	122	3
Rentals of Building/Real Property	12	0	0	0	0	0	0	0	0
Rental of Equipment	12	(490)	(437)	(39)	(0)	0	(2)	(11)	(0)
Transportation Expense	12	78,984	70,517	6,319	55	0	300	1,753	39
Advertising	12	0	0	0	0	0	0	0	0
Bad Debt Expense	12	190,805	170,351	15,264	134	0	725	4,236	95
Fringe Benefits	12	309,379	276,214	24,750	217	0	1,176	6,868	155
Miscellaneous Other	12	218	195	17	0	0	1	5	0
Communication Services	12	0	0	0	0	0	0	0	0
Office Expense, Utilities and Other	12	(1,108)	(989)	(89)	(1)	0	(4)	(25)	(1)
Uniforms	12	0	0	0	0	0	0	0	0
Postage	12	366,358	327,085	29,309	256	0	1,392	8,133	183
TOTAL CUSTOMER ACCOUNTING EXPENSE		2,000,972	1,790,159	160,397	1,401	0	7,621	40,483	912
ADMINISTRATIVE AND GENERAL EXPENSES									
Employee Salaries	14	1,083,945	636,167	273,696	17,885	26,340	45,309	30,567	53,980
Employee Pension & Benefits	16	2,604,660	1,478,665	681,119	45,061	65,637	113,824	76,317	144,038
Purchased Power	14	22,759	13,357	5,747	376	553	951	642	1,133
Accounting	14	0	0	0	0	0	0	0	0
Legal	14	0	0	0	0	0	0	0	0
Management Fees- Engineering	18	291,817	144,566	75,201	4,932	6,537	12,315	15,525	32,742
Management Fees- Customer Related	12	385,703	344,355	30,856	270	0	1,466	8,563	193
Management Fees- Employee related	16	303,900	172,524	79,470	5,257	7,658	13,280	8,904	16,806

SUEZ WATER PENNSYLVANIA INC.

COST OF SERVICE FOR THE TWELVE MONTHS ENDED DECEMBER 31, 2019, ALLOCATED TO CUSTOMER CLASSIFICATIONS

Account	Factor Ref.	Cost of Service	Residential			Commercial		Public		Fire Protection	
			Residential	Commercial	Industrial	Large Industrial	Public Authorities	Private	Public		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)		
Management Fees- Other	14	4,378,078	2,569,494	1,105,465	72,238	106,387	183,004	123,462	218,028		
Outside Services	14	246,794	144,844	62,316	4,072	5,997	10,316	6,960	12,290		
Outside Services - Mahoning	14	10,425	6,118	2,632	172	253	436	294	519		
Rental of Building/Real Property	14	60,451	35,478	15,264	997	1,469	2,527	1,705	3,010		
Rental of Equipment	14	39,180	22,995	9,893	646	952	1,638	1,105	1,951		
Transportation Expense	14	118,628	69,623	29,954	1,957	2,883	4,959	3,345	5,908		
Insurance - General Liability	14	4,935	2,896	1,246	81	120	206	139	246		
Insurance -Workman's Compensation	14	110,717	64,980	27,956	1,827	2,690	4,628	3,122	5,514		
Advertising	14	3,674	2,156	928	61	89	154	104	183		
Rate Case Expense - Amort	18	189,000	93,631	48,705	3,194	4,234	7,976	10,055	21,206		
Regulatory Commission Expense	18	270,077	133,796	69,599	4,564	6,050	11,397	14,368	30,303		
Fringe Benefits	16	(2,834,345)	(1,609,057)	(741,181)	(49,034)	(71,425)	(123,861)	(83,046)	(156,739)		
Miscellaneous Other	16	48,767	27,685	12,753	844	1,229	2,131	1,429	2,697		
Membership Dues	14	0	0	0	0	0	0	0	0		
Reg Fees for Conventions	14	0	0	0	0	0	0	0	0		
Communication Services	14	0	0	0	0	0	0	0	0		
Office Expenses and Utilities	14	482,593	283,234	121,855	7,963	11,727	20,172	13,609	24,033		
Uniforms, Materials and Supplies and Other	14	81,002	47,540	20,453	1,337	1,968	3,386	2,284	4,034		
Postage	14	0	0	0	0	0	0	0	0		
Subscriptions	14	0	0	0	0	0	0	0	0		
Travel	14	0	0	0	0	0	0	0	0		
TOTAL A & G EXPENSE		7,902,760	4,685,048	1,933,925	124,700	181,348	316,213	239,451	422,074		
Total Operation & Maintenance Expenses		19,259,294	11,203,591	5,016,807	331,042	510,844	843,894	489,131	863,984		
DEPRECIATION EXPENSE											
Water Source Structures	2	82,824	44,153	27,398	2,004	3,752	5,069	157	290		
Collection and Impounding Reservoirs	1	7,983	4,260	2,643	186	349	489	20	37		
Lakes, River and Other Intakes	2	214,637	114,423	71,002	5,194	9,723	13,136	408	751		
Wells & Springs	2	18,004	9,598	5,956	436	816	1,102	34	63		
Infiltration Galleries and Tunnels	2	400	213	132	10	18	24	1	1		
Purification Buildings	2	472,455	251,866	156,288	11,433	21,402	28,914	898	1,654		
Power Generation Equipment	3	0	0	0	0	0	0	0	0		
Electric Pumping Equipment	3	597,839	250,973	155,677	11,359	21,343	28,816	45,555	84,116		
Oil Engine Pumping Equipment	2	3,833	2,043	1,268	93	174	235	7	13		
Purification System - Treatment Structures	2	868,536	463,017	287,312	21,019	39,345	53,154	1,650	3,040		
Purification System - Painting	2	39,209	20,902	12,970	949	1,776	2,400	74	137		
Purification System - Chemical Treatment	2	598,011	318,800	197,822	14,472	27,090	36,598	1,136	2,093		
Laboratory Equipment	2	4,514	2,406	1,493	109	204	276	9	16		
T&D Structures and Improvements	6	12,150	4,161	3,455	239	96	570	1,275	2,353		
Distribution Reservoirs and Standpipes	5	396,205	135,146	123,061	8,439	11,490	19,612	34,589	63,868		
Distribution Mains	4	1,204,094	386,033	350,632	23,961	0	55,990	136,063	251,415		
Transmission Mains	3	1,014,970	426,085	264,298	19,284	36,234	48,922	77,341	142,806		
Services	9	720,889	621,262	70,575	865	72	3,460	24,654	0		

SUEZ WATER PENNSYLVANIA INC.

COST OF SERVICE FOR THE TWELVE MONTHS ENDED DECEMBER 31, 2019, ALLOCATED TO CUSTOMER CLASSIFICATIONS

Account (1)	Factor Ref (2)	Cost of Service (3)	Fire Protection						
			Residential (4)	Commercial (5)	Industrial (6)	Large Industrial (7)	Public Authorities (8)	Private (9)	Public (10)
Meters	8	976,632	731,009	226,969	4,590	781	13,282	0	0
Hydrants	7	128,185	0	0	0	0	0	0	128,185
General Land and Land Rights	14	6,374	3,741	1,609	105	155	266	180	317
Office Buildings	14	239,971	140,839	60,593	3,960	5,831	10,031	6,767	11,951
Stores, Shop and Garage Buildings	14	178,839	104,961	45,157	2,951	4,346	7,475	5,043	8,906
Miscellaneous Structures and Improvements	14	17,015	9,986	4,296	281	413	711	480	847
Other Plant and Miscellaneous Equipment	14	8,424	4,944	2,127	139	205	352	238	420
Office Furniture and Equipment	14	33,217	19,495	8,387	548	807	1,388	937	1,654
Computer Software	14	80,761	47,399	20,392	1,333	1,962	3,376	2,277	4,022
Computer Software-CIS Implementator	12	5,653	5,047	452	4	0	21	125	3
Transportation Equipment	14	215	126	54	4	5	9	6	11
Stores Equipment	14	0	0	0	0	0	0	0	0
Tools and work Equipment	14	48,767	28,621	12,314	805	1,185	2,038	1,375	2,429
Shop Equipment	14	109,759	64,418	27,714	1,811	2,667	4,588	3,095	5,466
Power Operated Equipment	14	0	0	0	0	0	0	0	0
Communication Equipment	14	555,964	326,295	140,381	9,173	13,510	23,239	15,678	27,687
Miscellaneous Equipment	14	10,332	6,064	2,609	170	251	432	291	515
Total Depreciation Expense		8,656,662	4,548,285	2,285,039	145,926	206,003	365,977	360,364	745,066
Amortization of Acquisition Adjustment	18	57,744	28,606	14,881	976	1,293	2,437	3,072	6,479
Amortization of Regulatory Liability	18	(265,198)	(131,379)	(68,342)	(4,482)	(5,940)	(11,191)	(14,109)	(29,755)
Taxes Other Than Income									
Real Estate	18	318,178	157,625	81,994	5,377	7,127	13,427	16,927	35,700
Payroll Taxes	16	650,213	369,126	170,031	11,249	16,385	28,414	19,051	35,957
Total Taxes, Other Than Income		968,391	526,751	252,025	16,626	23,513	41,841	35,978	71,656
Income Taxes	18	5,675,653	2,811,718	1,462,616	95,919	127,135	239,513	301,945	636,808
Utility Income Available for Return	18	18,639,005	9,233,763	4,803,272	314,999	417,514	786,566	991,595	2,091,296
Total Cost of Service		52,991,551	28,221,336	13,766,298	901,006	1,280,362	2,269,037	2,167,977	4,385,534
Less: Other Water Revenues	19	405,611	215,947	105,378	6,895	9,816	17,360	16,630	33,625
Total Cost of Service Related to Sales of Water		52,585,940	28,005,389	13,660,920	894,111	1,270,546	2,251,677	2,151,347	4,351,909
Reallocation of Public Fire	20	0	2,502,246	776,916	15,712	2,674	45,465	0	(3,343,014)
Total		\$ 52,585,940	\$ 30,507,635	\$ 14,437,837	\$ 909,823	\$ 1,273,220	\$ 2,297,142	\$ 2,151,347	\$ 1,008,895

SUEZ WATER PENNSYLVANIA INC.

COST OF SERVICE FOR THE TWELVE MONTHS ENDED DECEMBER 31, 2019, ALLOCATED TO CUSTOMER CLASSIFICATIONS

Account (1)	Factor Ref (2)	Cost of Service (3)	Fire Protection						
			Residential (4)	Commercial (5)	Industrial (6)	Large Industrial (7)	Public Authorities (8)	Private (9)	Public (10)
RATE BASE									
Organization	17	\$ (85,780)	\$ (42,461)	\$ (22,106)	\$ (1,450)	\$ (1,913)	\$ (3,620)	\$ (4,572)	\$ (9,659)
Franchises and Consents	17	64,266	31,811	16,561	1,086	1,433	2,712	3,425	7,236
Source of Supply - Land and Land Rights	2	469,867	250,486	155,432	11,371	21,285	28,756	893	1,645
Water Source Structures	2	2,327,346	1,240,708	769,886	56,322	105,429	142,434	4,422	8,146
Collection and Impounding Reservoirs	1	318,763	170,092	105,543	7,427	13,930	19,508	797	1,466
Lakes, River and Other Intakes	2	5,328,927	2,840,851	1,762,809	128,960	241,400	326,130	10,125	18,651
Wells & Springs	2	482,753	257,356	159,695	11,683	21,869	29,544	917	1,690
Infiltration Galleries and Tunnels	2	10,501	5,598	3,474	254	476	643	20	37
Water Treatment - Land and Land Rights	2	1,234,766	658,254	408,460	29,881	55,935	75,568	2,346	4,322
Purification Buildings	2	14,392,820	7,672,813	4,761,145	348,306	651,895	880,841	27,346	50,375
Power Generation Equip	3	-	-	-	-	-	-	-	-
Electric Pumping Equipment	3	10,681,671	4,484,166	2,781,507	202,952	381,336	514,857	813,943	1,502,911
Oil Engine Pumping Equipment	2	59,336	31,632	19,628	1,436	2,688	3,631	113	208
Purification System - Treatment Structures	2	23,361,387	12,453,955	7,727,947	565,346	1,058,271	1,429,717	44,387	81,765
Purification System - Painting	2	184,863	98,550	61,153	4,474	8,374	11,314	351	647
Purification System - Chemical Treatment	2	7,238,782	3,858,995	2,394,589	175,179	327,917	443,013	13,754	25,336
Laboratory Equipment	2	34,224	18,245	11,321	828	1,550	2,094	65	120
T&D - Land and Land Rights	6	1,893,254	648,440	538,442	37,297	14,957	88,794	198,602	366,723
T&D Structures and Improvements	6	388,263	132,980	110,422	7,649	3,067	18,210	40,729	75,207
Distribution Reservoirs and Standpipes	5	9,566,933	3,263,281	2,971,489	203,776	277,441	473,563	835,193	1,542,190
Distribution Mains	4	50,938,186	16,330,783	14,833,200	1,013,670	-	2,368,626	5,756,015	10,635,893
Transmission Mains	3	54,514,874	22,885,344	14,195,673	1,035,783	1,946,181	2,627,617	4,154,033	7,670,243
Services	9	28,929,900	24,931,788	2,832,237	34,716	2,893	138,864	989,403	-
Meters	8	14,543,019	10,885,450	3,379,798	68,352	11,634	197,785	-	-
Hydrants	7	5,434,893	0	0	0	0	0	0	5,434,893
Other Plant and Miscellaneous Equipment	14	151,899	89,150	38,355	2,506	3,691	6,349	4,284	7,565
General Land and Land Rights	14	961,927	564,555	242,886	15,872	23,375	40,209	27,126	47,904
Office Buildings	14	9,238,720	5,422,205	2,332,777	152,439	224,501	386,178	260,532	460,088
Stores, Shop and Garage Buildings	14	3,711,277	2,178,148	937,097	61,236	90,184	155,131	104,658	184,822
Miscellaneous Structures and Improvements	14	169,011	99,192	42,675	2,789	4,107	7,065	4,766	8,417
Office Furniture and Equipment	14	355,574	208,686	89,782	5,867	8,640	14,863	10,027	17,708
Computer Software	14	95,772	56,208	24,182	1,580	2,327	4,003	2,701	4,769
Computer Software-CIS Implementation	12	5,653	5,047	452	4	0	21	125	3
Transportation Equipment	14	528	310	133	9	13	22	15	26
Stores Equipment	14	-	0	0	0	0	0	0	0
Tools and work Equipment	14	737,438	432,802	186,203	12,168	17,920	30,825	20,796	36,724
Shop Equipment	14	1,411,787	828,578	356,476	23,294	34,306	59,013	39,812	70,307
Power Operated Equipment	14	-	0	0	0	0	0	0	0
Communication Equipment	14	3,219,677	1,889,628	812,968	53,125	78,238	134,582	90,795	160,340
Miscellaneous Equipment	14	107,479	63,079	27,138	1,773	2,612	4,493	3,031	5,352
Plant Held for Future Use	2	-	0	0	0	0	0	0	0
Total Utility Plant in Service		252,480,556	124,946,705	65,069,432	4,277,958	5,638,062	10,663,354	13,460,976	28,424,068

SUEZ WATER PENNSYLVANIA INC.

COST OF SERVICE FOR THE TWELVE MONTHS ENDED DECEMBER 31, 2019, ALLOCATED TO CUSTOMER CLASSIFICATIONS

Account (1)	Factor Ref. (2)	Cost of Service (3)	Fire Protection						
			Residential (4)	Commercial (5)	Industrial (6)	Large Industrial (7)	Public Authorities (8)	Private (9)	Public (10)
Other Rate Base Items									
Add									
Cash Working Capital	15	863,746	505,464	225,092	14,856	23,062	37,918	20,989	36,364
Materials and Supplies	14	481,594	282,647	121,602	7,946	11,703	20,131	13,581	23,983
Less									
Deferred Income Taxes	17	(18,810,736)	(9,311,314)	(4,847,527)	(317,901)	(419,479)	(793,813)	(1,002,612)	(2,118,089)
Total Other Rate Base Elements		(17,465,396)	(8,523,203)	(4,500,832)	(295,099)	(384,715)	(735,764)	(968,042)	(2,057,742)
Total Original Cost Measure of Value		\$ 235,015,160	\$ 116,423,502	\$ 60,568,600	\$ 3,982,860	\$ 5,253,347	\$ 9,927,590	\$ 12,492,934	\$ 26,366,326

SUEZ WATER PENNSYLVANIA INC.

COMPARISON OF PRESENT AND PROPOSED RATES

MTR SIZE	Residential			Commercial (includes Apt)			Industrial		
	Service Charge		% Increase	Service Charge		% Increase	Service Charge		% Increase
	Present Rate	Proposed Rate		Present Rate	Proposed Rate		Present Rate	Proposed Rate	
5/8"-3/4"	\$ 13.75	\$ 15.00	9.091%	\$ 13.75	\$ 15.00	9.091%	\$ 13.75	\$ 15.00	9.091%
1"	\$ 28.50	\$ 31.09	9.088%	\$ 28.50	\$ 31.09	9.088%	\$ 28.50	\$ 31.09	9.088%
1-1/2"	\$ 57.00	\$ 62.18	9.088%	\$ 57.00	\$ 62.18	9.088%	\$ 57.00	\$ 62.18	9.088%
2"	\$ 97.63	\$ 106.51	9.096%	\$ 97.63	\$ 106.51	9.096%	\$ 97.63	\$ 106.51	9.096%
3"	\$ 183.13	\$ 199.78	9.092%	\$ 183.13	\$ 199.78	9.092%	\$ 183.13	\$ 199.78	9.092%
4"	\$ 305.25	\$ 333.00	9.091%	\$ 305.25	\$ 333.00	9.091%	\$ 305.25	\$ 333.00	9.091%
6"	\$ 610.50	\$ 666.00	9.091%	\$ 610.50	\$ 666.00	9.091%	\$ 610.50	\$ 666.00	9.091%
8"	\$ 976.88	\$ 1,065.69	9.091%	\$ 976.88	\$ 1,065.69	9.091%	\$ 976.88	\$ 1,065.69	9.091%
10"	\$ 1,404.25	\$ 1,531.91	9.091%	\$ 1,404.25	\$ 1,531.91	9.091%	\$ 1,404.25	\$ 1,531.91	9.091%
	Consumption Charge			Consumption Charge			Consumption Charge		
No Block	\$ 7.7506	\$ 9.5000	22.571%	\$ 7.7506	\$ 9.5000	22.571%	\$ 7.7506	\$ 9.5000	22.571%
First 25 MGL				\$ 5.4321	\$ 7.1020	30.741%	\$ 5.7618	\$ 7.9500	37.978%
All Over 25 MGL									

MTR SIZE	Public Authority			Large Industrial		
	Service Charge		% Increase	Service Charge		% Increase
	Present Rate	Proposed Rate		Present Rate	Proposed Rate	
5/8"-3/4"	\$ 13.75	\$ 15.00	9.091%	\$ 13.75	\$ 15.00	9.091%
1"	\$ 28.50	\$ 31.09	9.088%	\$ 28.50	\$ 31.09	9.088%
1-1/2"	\$ 57.00	\$ 62.18	9.088%	\$ 57.00	\$ 62.18	9.088%
2"	\$ 97.63	\$ 106.51	9.096%	\$ 97.63	\$ 106.51	9.096%
3"	\$ 183.13	\$ 199.78	9.092%	\$ 183.13	\$ 199.78	9.092%
4"	\$ 305.25	\$ 333.00	9.091%	\$ 305.25	\$ 333.00	9.091%
6"	\$ 610.50	\$ 666.00	9.091%	\$ 610.50	\$ 666.00	9.091%
8"	\$ 976.88	\$ 1,065.69	9.091%	\$ 976.88	\$ 1,065.69	9.091%
10"	\$ 1,404.25	\$ 1,531.91	9.091%	\$ 1,404.25	\$ 1,531.91	9.091%
	Consumption Charge			Consumption Charge		
No Block	\$ 7.7506	\$ 9.5000	22.571%	\$ 3.60450	\$ 4.4000	22.070%
First 25 MGL	\$ 5.4321	\$ 7.1020	30.741%			
All Over 25 MGL						

FIRE PROTECTION

	Private Fire Protection-Monthly			Private Fire Hydrant-Monthly			Public Fire Protection-Monthly		
	Current Per Unit	Proposed Rate	% Increase	Current Per Unit	Proposed Rate	% Increase	Current Per Unit	Proposed Rate	
2"	\$ 19.30	\$ 22.58	16.995%				Hydrants-BMB	\$ 18.33	\$ 20.00
3"	\$ 52.05	\$ 60.90	17.003%				Hydrants-DAL	\$ 18.33	\$ 20.00
4"	\$ 66.76	\$ 78.11	17.001%	\$ 43.00	\$ 50.31	17.000%	Hydrants-HAR	\$ 24.17	\$ 25.83
6"	\$ 110.98	\$ 129.85	17.003%				Hydrants-MEC	\$ 25.83	\$ 25.83
8"	\$ 165.42	\$ 193.54	16.999%						
10"	\$ 236.86	\$ 277.13	17.002%						
12"	\$ 328.64	\$ 384.51	17.000%						
14"	\$ 603.72	\$ 706.35	17.000%						

SUEZ WATER PENNSYLVANIA INC.

COMPARISON OF PRESENT AND PROPOSED RATES - MAHONING TOWNSHIP

	Residential				Commercial			
	Present		Proposed		Present		Proposed	
	Rate	Present	Rate	Proposed	Rate	Present	Rate	Proposed
	Minimum	Allowance	Service Charge*		Minimum	Allowance	Service Charge*	
5/8"	\$ 64.13	6,000	\$ 13.75	\$ 64.13	6,000	\$ 13.75		
3/4"	\$ 80.85	10,000	\$ 13.75	\$ 80.85	10,000	\$ 13.75		
1"	\$ 98.87	14,000	\$ 28.50	\$ 98.87	14,000	\$ 28.50		
1-1/2"	\$ 134.84	22,000	\$ 57.00	\$ 134.84	22,000	\$ 57.00		
2"	\$ 170.87	30,000	\$ 97.63	\$ 170.87	30,000	\$ 97.63		
3"	NA		\$ 183.13	NA	-	\$ 183.13		
4"	\$ 314.89	62,000	\$ 305.25	\$ 314.89	62,000	\$ 305.25		
6"	\$ 458.91	94,000	\$ 610.50	\$ 458.91	94,000	\$ 610.50		
10"				\$ -	-	\$ -		
	Consumption Charge				Consumption Charge			
No Block	\$ 5.8300		\$ 9.5000	\$ 5.8300				
First 25 MGL						\$ 9.5000		
All Over 25 MGL						\$ 7.1020		

* No Allowance

SWPA STATEMENT NO. 6-R
DOCKET NO. R-2018-3000834

BEFORE THE
PENNSYLVANIA PUBLIC UTILITY COMMISSION

REBUTTAL TESTIMONY OF
PAUL R. HERBERT

ON BEHALF OF SUEZ WATER PENNSYLVANIA INC.

CONCERNING

COST OF SERVICE ALLOCATION

AND

CUSTOMER RATE DESIGN

AUGUST 17, 2018

BEFORE THE PENNSYLVANIA PUBLIC UTILITY COMMISSION

RE: SUEZ WATER PENNSYLVANIA INC
DOCKET R-2018-3000834
REBUTTAL TESTIMONY OF PAUL R. HERBERT

Line
No.

- 1 **Q. Please state your name and address.**
- 2 A. My name is Paul R. Herbert. My business address is 207 Senate Avenue,
3 Camp Hill, Pennsylvania.
- 4 **Q. By whom are you employed?**
- 5 A. I am employed by Gannett Fleming Valuation and Rate Consultants, LLC.
- 6 **Q. Are you the same Paul Herbert that submitted direct testimony and**
7 **exhibits in this proceeding?**
- 8 A. Yes, I submitted Statement No. 6 and Exhibit Nos. PRH-1 and PRH-2 in
9 April of this year.
- 10 **Q. What is the subject of your rebuttal testimony?**
- 11 A. I will address the issues raised by OTS witness Ethan Cline, OCA witness
12 Jerome Mierzwa, and OSBA witness Brian Kalcic concerning direct
13 customer costs, proposed customer charges, rate design, and revenue
14 distribution and scale-back.
- 15 **Q. Please address Mr. Kalcic's issue related to the design of the proposed**
16 **Standby Charges.**
- 17 A. Mr. Kalcic agrees with the proposed standby charges in principle but
18 disagrees with the calculation of such charges. My calculation used total
19 base and extra capacity costs as the basis for the charges. Mr. Kalcic

1 recommends that since the standby charges are only applicable to non-
2 residential customers, the charges should be based only on the portion of
3 those costs allocated to non-residential classifications.

4 **Q. Do you agree with Mr. Kalcic's revisions?**

5 A. I agree that the standby charges could be based on costs allocated to non-
6 residential customers, but I disagree with his calculation. The amount of
7 base and maximum day and hour extra capacity costs in his calculation are
8 incorrect for two reasons. First, the functional allocation required revision to
9 correct the use of Factor 4 and second, the amount of maximum hour extra
10 capacity costs allocated to non-residential was not summarized properly. I
11 have attached Exhibit No. 6-R-1 that corrects the functional allocation
12 (shifted costs from maximum day to base costs) as well as the correct
13 maximum hour costs allocated to non-residential customers. The exhibit
14 shows the revised calculation using total costs and the amount allocated to
15 non-residential. This correction results in a monthly demand charge of
16 \$160.03 per thousand gallons of daily demand and a consumption rate of
17 \$3.18 per thousand gallons for actual usage. The demand charge can be
18 applied to nominations in 100 gallon increments as Mr. Kalcic suggests.

19 **Q. Please address the issues raised in Mr. Mierzwa's testimony.**

20 A. Mr. Mierzwa recommends 1) using the cost of service study which excludes
21 Mahoning Township consistent with OCA's revenue requirement position; 2)
22 rejecting the Company's revenue distribution and approve the OCA's
23 recommendation; and 3) maintaining the existing customer charges under
24 present rates.

1 **Q. Please respond.**

2 A. The Company does not oppose using the cost of service study that excludes
3 Mahoning Township for the purposes of determining the revenue distribution
4 in this case. However, I do not agree with the revenue distribution proposed
5 by Mr. Mierzwa.

6 **Q. What is Mr. Mierzwa's proposal for revenue distribution?**

7 A. Mr. Mierzwa proposes to move revenues more toward the cost of service
8 than the Company's proposal. He achieves this result by proposing a 21.7%
9 increase for both Public Authority and Private Fire Protection classes (similar
10 to the increase the Company proposed for Large Industrial) and to propose 3
11 to 4% higher increases for Commercial and Industrial classes. Not
12 surprisingly, the benefit for these higher increases would all go to the
13 residential class.

14 **Q. Has Mr. Mierzwa submitted a rate design that achieves his**
15 **recommended revenue distribution?**

16 A. No, he has not.

17 **Q. What do you find unusual about Mr. Mierzwa's proposal?**

18 A. In my experience, the OCA witness will limit the increase to any one class to
19 150% of the system average increase to recognize gradualism. Here, Mr.
20 Mierzwa recommends increases for three classes that are twice the system
21 average.

22 **Q. Do you agree that the Commission should accept Mr. Mierzwa's revenue**
23 **distribution proposal in place of the Company's?**

1 A. No, I do not. The Company's proposal sufficiently moves revenues toward
2 cost of service and takes into account the concept of gradualism.

3 **Q. What is Mr. Mierzwa's position regarding the proposed customer**
4 **charges?**

5 A. Mr. Mierzwa recommends that existing customer charges should be
6 maintained with no increase.

7 **Q. Why does he make this recommendation?**

8 A. He claims that my direct customer cost analysis should exclude bad debt
9 expense and thus, any increase to the customer charge should be rejected.

10 **Q. Does bad debt expense make up all the proposed increase to the**
11 **customer charge?**

12 A. No. Bad debt expense is only \$0.25 per bill. ($\$186,588 / 62,282$ customers /
13 12 months = \$0.25). The Company is proposing the 5/8-inch charge
14 increase from \$13.75 to \$15.00 per month or \$1.25 per month. Regardless,
15 bad debt expense should be included in direct customer costs consistent
16 with how such costs are allocated to customer classifications, which Mr.
17 Mierzwa did not oppose.

18 **Q. Please explain.**

19 A. The allocation of bad debt expense to customer classes was based on the
20 number of customers because the level of uncollectible accounts varies with
21 the number of customers not usage. Mr. Mierzwa did not oppose my
22 allocation of bad debt expense to customer classes. Bad debt expense is a
23 direct customer cost because it varies with the number of customers and
24 therefore should be recovered in the customer charge. Excluding this

1 expense from customer charges results in 100% of this expense being
2 recovered in usage charges, which is a total disconnect to how such costs
3 are incurred. Mr. Mierzwa's recommendation to maintain customer charges
4 under existing rates should be rejected.

5 **Q. Please address Mr. Cline's position regarding customer charges.**

6 A. Mr. Cline opposes the Company's proposed increase to customer charges
7 because he does not agree with my direct customer cost analysis.

8 **Q. Was your proposed customer charge of \$15.00 the result of only a
9 direct cost analysis?**

10 A. No. My proposed customer charges also considered the fully allocated
11 customer cost analysis. A fully allocated cost analysis includes an allocable
12 share of the administrative and general costs in the customer cost
13 components. That is, under the fully allocated analysis, the administrative
14 and general costs are allocated to both customer charges and consumption
15 charges in proportion to the other directly assigned costs, excluding variable
16 costs such as power, chemical, and waste disposal costs.

17 **Q. Is there support for using a fully allocated customer cost analysis?**

18 A. Yes. The American Water Works Association ("AWWA") M1 Manual clearly
19 shows the use of fully allocated customer costs to develop the customer
20 charges on Table IV.7-1. The customer cost components used in the
21 customer charge example were brought forward from Table III.2-5 and Table
22 III.2-3, which utilize the full allocation of administrative and general costs to
23 the cost functions, including meter and services and billing and collecting
24 functions, in Table III.1-3. The referenced Tables from the Manual are
25 attached as Exhibit No. 6-R-2.

26 **Q. Does the AWWA M1 Manual support the use of only direct customer**

1 **costs to determine customer charges?**

2 A. No, it does not. There is no mention in the M1 Manual of using only direct
3 customer costs for the purposes of calculating the customer charges.

4 **Q. Are there other reasons that support the use of the fully allocated
5 method?**

6 A. Yes. Administrative and general costs are fixed costs supporting the entire
7 operation that do not vary based on the amount of water consumed. So, if
8 none of the administrative and general costs are allocated to customer
9 related functions, then 100% of these costs will be allocated to consumption
10 charges, which is not logical. A failure to properly allocate these fixed costs
11 results in customer charges that are understated and consumption charges
12 that are overstated.

13 **Q. What concerns have been expressed, if any, with your full allocation
14 method?**

15 A. Mr. Cline expresses concern that higher customer charges will provide a
16 disincentive for water conservation. With consumption charges exceeding
17 \$9 per thousand gallons, however, there will be and always has been a price
18 signal for customers to conserve and the Company has certainly
19 experienced such decreases in usage over the last several years.
20 Customers will still have the ability to reduce their overall bill with only basic
21 conservation measures.

22 **Q. If the Commission continues its policy of using only direct costs to
23 determine the customer charge, what do you recommend?**

24 A For direct costs only, I would recommend an analysis similar to the one I
25 prepared on Schedule H of Exhibit No. PRH-1, which also supports a 5/8-
26 inch residential customer charge of \$15.00 per month.

27 **Q. Please describe what costs should be included in a direct customer**

1 **cost analysis.**

2 A. A properly designed customer charge includes the operation and
3 maintenance expenses and capital costs (depreciation, return and taxes)
4 associated with meters and service lines as well as the cost for meter
5 reading, billing and collecting. The operation and maintenance expenses
6 must also include the supervision labor for customer-related employees,
7 payroll taxes and employee benefits for the customer cost-related labor, bad
8 debt expense, management fees associated with customer billing and
9 accounting, and other customer accounting expenses.

10 Also, it is entirely appropriate to include costs necessary to efficiently
11 perform customer-related activities. These costs include 1) computers and
12 software to receive downloaded meter reading information, maintain
13 customer records and generate, print and mail bills to customers; 2) vehicles
14 to provide transportation for field technicians performing meter testing and
15 service line repairs and meter readers to complete their routes; and 3) a
16 portion of office buildings and office furniture and equipment costs so that
17 field technicians, meter readers, and customer service personnel have a
18 place to work and operate computers. These are all direct costs necessary
19 to efficiently perform customer-related activities.

21 **Q. What other costs should be recovered in customer charges?**

22 A. According to 66 Pa.C.S. § 1328, Determination of public fire hydrant rates, a
23 public utility that furnishes water to or for the public shall be allowed to
24 recover in rates the full cost of service related to public fire hydrants. It
25 further states that any unrecovered public fire hydrant costs due to the 25%

1 cost of service threshold, must be recovered in the utility's fixed charges, as
2 follows:

3 "(2) The commission shall also as part of the utility's general rate
4 proceeding provide for the recovery of the remaining cost of
5 service for those public fire hydrants not recovered from
6 municipalities under paragraph (1) by assessing all customers of
7 the public utility the remaining cost of service to the public fire
8 hydrants. The remaining cost of service for those public fire
9 hydrants shall be included in the public utility's fixed or service
10 charge or minimum bill."
11

12 **Q. What costs did Mr. Cline exclude from you direct cost analysis?**

13 A. He excludes salaries for maintaining transmission and distribution structures
14 and improvements, management fees associated with customer service and
15 human resources, transportation expense and worker's compensation.

16 **Q. Why did you include such costs in your direct customer costs?**

17 A. I included these costs because as I explained earlier, these expenditures are
18 vital to providing comprehensive customer-related activities. The salaries for
19 maintaining transmission and distribution (T&D) structures and
20 improvements are required since T&D Structures and improvements are
21 where T&D field services employees, meter readers, and customer service
22 personnel report and work from. These employees are involved with
23 customer service lines, customer meters, meter reading and responding to
24 general customer service inquiries.

25 Management fees are those allocated from shared services for
26 various functions. If SUEZ-PA did not receive this benefit from shared
27 services, these costs would be borne directly by the local (PA) utility. The
28 portion of management fees that are customer related are associated with

1 Customer Service Administration or Customer Care which provides
2 guidance, training, control and management reporting for the Customer
3 Service process and standardizes customer service practices throughout the
4 SUEZ Water regulated business units. Obviously, these activities are
5 directly related to customer service and should be included in customer
6 charges.

7 Management fees – employee related are those shared services that
8 address human resources expenses. Again, if SUEZ-PA did not receive this
9 benefit from shared services, they would have to provide them “in-house”.
10 Only a portion of these costs are allocated to customer-related functions
11 similar to payroll taxes and other employee related costs. (Mr. Cline
12 appropriately included an allocation of payroll taxes in his direct customer
13 costs.) Another employee related expense is workmens’ compensation
14 insurance. A portion of this expense is appropriately allocated to customer-
15 related costs, again similar to how payroll taxes are allocated.

16 Lastly, a portion of transportation expense is also a direct customer
17 cost. T&D field service employees and meter readers require vehicles to
18 perform their jobs efficiently.

19 **Q. What other customer-related costs were omitted in his direct costs?**

20 A. Mr. Cline also excludes bad debt expense. I explained earlier in my rebuttal
21 testimony why it is appropriate to include such costs in customer charges.

22 **Q. Has the Commission accepted your method for determining direct**
23 **customer costs?**

1 A. Yes. I followed the method used to determine the direct customer costs in
2 the 2003 Aqua Pennsylvania (formerly Pennsylvania Suburban Water
3 Company), at Docket No. R-00038805, approved by the Commission. This
4 direct customer cost methodology was reaffirmed by the Commission in the
5 recent PPL case at Docket No. R-2012-2290597, as follows:

6 Upon our consideration of the evidence of record herein, we
7 shall adopt the ALJ's Recommendation on this issue that
8 PPL's compromise proposal is reasonable and should be
9 approved. In this regard, we conclude that PPL's original
10 proposal is excessive, disregards the principle of gradualism
11 and is not reasonable. Additionally, we conclude that the
12 recommendations of I&E and the OCA that the residential
13 customer charge not be increased at all in this proceeding
14 are equally unreasonable as they are not based on a proper
15 cost analysis. We further conclude that the ALJ correctly
16 recommended that, consistent with *Aqua*, other customer-
17 related costs are properly includable in a customer charge
18 cost analysis. We find that the I&E proposed limitation of
19 costs to only services and meters excludes all other
20 customer costs that should be included in a customer charge
21 and is unreasonably narrow.
22

23 **Q. Who was the witness in the 2003 Aqua (*Aqua*) case that developed the**
24 **direct customer cost methodology?**

25 A. I was the witness. I prepared and sponsored Exhibit No. 5-R-1 in that case
26 which determined the proper level of direct customer costs. I have attached
27 Exhibit No. 5-R-1 from the 2003 Aqua case as Exhibit No. 6-R-3 to my
28 rebuttal testimony.

29 **Q. Did you include costs in your direct cost analysis for SUEZ-PA similar to**
30 **those included in *Aqua*?**

1 A. Yes, consistent with *Aqua*, I included the direct costs for meters, service
2 lines, customer billing, meter reading and customer accounting including bad
3 debt expense. I also included an allocable portion of transmission and
4 distribution supervision, employee pensions, payroll taxes and benefits, office
5 buildings, furniture and equipment, computers and transportation equipment.
6 All of these items are necessary to provide customer-related services and
7 directly related to customer costs.

8 **Q. What do you conclude with respect to direct customer costs and**
9 **proposed customer charges?**

10 A. Customer charges should consider both the fully allocated customer costs as
11 well as the direct customer costs. I have demonstrated that 1) Mr. Cline's
12 direct customer cost analysis is flawed and omits items that should be
13 included, 2) my direct customer cost analysis is appropriate and consistent
14 with Commission precedent, and 3) fully allocated and direct customer costs
15 support the proposed customer charge for a 5/8-inch meter of \$15.00 per
16 month.

17 **Q. Is the Company's proposed 5/8-inch customer charge of \$15.00 per**
18 **month out of line with other regulated Pennsylvania water utilities?**

19 A. No, it is not. Pennsylvania-American's existing customer charge is \$16.50
20 per month; Aqua Pennsylvania's current rate is \$16.00 per month; and York
21 Water Company's current rate is \$16.00 per month.

22 **Q. If the Commission grants less than the Company's requested increase**
23 **in revenue, what is your scale-back proposal?**

1 A. The scale-back in the revenue increase should be a proportional scale-back
2 of the Company's original proposal excluding public fire service. Public fire
3 should be excluded since the increase is only to move certain public hydrant
4 rates that are below the 25% cost of service level up to the 25% cost of
5 service threshold. The scale-back should be entirely from the consumption
6 charges leaving the proposed customer charges as-filed.

7 **Q. Does this conclude your rebuttal testimony?**

8 A. Yes, it does.

9
10



SUEZ WATER PENNSYLVANIA INC.

CALCULATION OF STANDBY RATES

Line No.	Description	Depreciation, Return and Income Taxes	Allocated to Non-Residential
1	Base Costs	\$15,474,769	\$ 7,141,606
2	Extra Capacity Costs:		
3	Maximum Day	3,730,265	1,743,899
4	Maximum Hour	<u>2,481,448</u>	<u>1,585,005</u>
5	Total	<u>\$21,686,483</u>	<u>\$ 10,470,510</u>
6	Cost per Month (Ln 5 / 12)	\$ 1,807,207	\$ 872,542
7	Annual Usage, Thousand Gallons	4,311,361	1,990,112
8	Usage per Day, Thousand Gallons (Ln 7 / 365)	11,812	5,452
9	Cost per Month per Thousand Gallons		
10	of Daily Demand (Ln 6 / Ln 8)	\$ 153.00	\$ 160.03
11	Remaining Base and Extra Capacity Costs	\$ 13,352,576	\$ 6,322,014
12	Cost per Thousand Gallons (Ln 11 / Ln 7)	\$ 3.10	\$ 3.18

SUEZ WATER PENNSYLVANIA INC.

COST OF SERVICE FOR THE TWELVE MONTHS ENDED DECEMBER 31, 2019, ALLOCATED TO COST FUNCTIONS

<u>Account</u>		<u>Cost of Service</u>	<u>Base</u>	<u>Max Day</u>	<u>Max Hour</u>	<u>Meters</u>	<u>Services</u>	<u>Billing & Collecting</u>	<u>Fire Service</u>
OPERATION AND MAINTENANCE EXPENSES									
SOURCE OF SUPPLY EXPENSES									
Employee Salaries	2	525,412	401,310	121,265	0	0	0	0	2,837
Purchased Water	1	182,928	181,629	0	0	0	0	0	1,299
Purchased Water - Mahoning	1	360,835	358,273	0	0	0	0	0	2,562
Purchased Power	1	724,633	719,489	0	0	0	0	0	5,145
Purchased Power - Mahoning	1	11,510	11,428	0	0	0	0	0	82
Fuel for Power Production	1	2,099	2,084	0	0	0	0	0	15
Material and Supplies	2	2,727	2,083	629	0	0	0	0	15
Outside Services	2	16,557	12,646	3,821	0	0	0	0	89
Outside Services - Mahoning	2	699	534	161	0	0	0	0	4
Rental of Building/Real Property	2	0	0	0	0	0	0	0	0
Transportation Expense	2	18,323	13,995	4,229	0	0	0	0	99
Fringe Benefits	2	72,542	55,407	16,743	0	0	0	0	392
Miscellaneous Other	2	0	0	0	0	0	0	0	0
Office Expenses and Utilities	2	2,321	1,773	536	0	0	0	0	13
Uniforms	2	0	0	0	0	0	0	0	0
TOTAL SOURCE OF SUPPLY EXPENSE - OPERATION		1,920,586	1,760,651	147,384	0	0	0	0	12,551
Employee Salaries	2	102,994	78,667	23,771	0	0	0	0	556
Fuel for Power Production	1	0	0	0	0	0	0	0	0
Material and Supplies	2	6,066	4,633	1,400	0	0	0	0	33
Outside Services	2	145,795	111,358	33,649	0	0	0	0	787
Outside Services - Mahoning	2	6,159	4,704	1,421	0	0	0	0	33
Uniforms	2	0	0	0	0	0	0	0	0
Transportation Expense	2	46,087	35,201	10,637	0	0	0	0	249
Miscellaneous Other	2	177,106	135,274	40,876	0	0	0	0	956
TOTAL SOURCE OF SUPPLY EXPENSE - MAINTENANCE		484,207	369,837	111,755	0	0	0	0	2,615
TOTAL SS EXPENSE		2,404,793	2,130,488	259,139	0	0	0	0	15,165
WATER TREATMENT									
Employee Salaries	2	1,349,053	1,030,407	311,361	0	0	0	0	7,285
Purchased Power	1	(19,256)	(19,120)	0	0	0	0	0	(137)
Purchased Power - Mahoning	1	(306)	(304)	0	0	0	0	0	(2)
Chemicals	1	599,527	595,270	0	0	0	0	0	4,257
Membranes - Bloomsburg	2	0	0	0	0	0	0	0	0
Maintenance - Bloomsburg	2	0	0	0	0	0	0	0	0
Material and Supplies	2	8,723	6,662	2,013	0	0	0	0	47
Testing	2	83,542	63,809	19,281	0	0	0	0	451
Outside Services	2	288,711	220,518	66,635	0	0	0	0	1,559
Outside Services - Mahoning	2	12,196	9,315	2,815	0	0	0	0	66
Transportation Expense	2	133,249	101,776	30,754	0	0	0	0	720
Fringe Benefits	2	525,755	401,572	121,344	0	0	0	0	2,839

SUEZ WATER PENNSYLVANIA INC.

COST OF SERVICE FOR THE TWELVE MONTHS ENDED DECEMBER 31, 2019, ALLOCATED TO COST FUNCTIONS

<u>Account</u>		<u>Cost of Service</u>	<u>Base</u>	<u>Max Day</u>	<u>Max Hour</u>	<u>Meters</u>	<u>Services</u>	<u>Billing & Collecting</u>	<u>Fire Service</u>
Employee Salaries - Miscellaneous Plant	11	20,714	6,856	644	3,807	0	3,252	0	6,154
Fuel for Power Production	1	0	0	0	0	0	0	0	0
Material and Supplies	11	89,550	29,641	2,785	16,459	0	14,059	0	26,605
Outside Services	11	32,906	10,892	1,023	6,048	0	5,166	0	9,776
Outside Services - Mahoning	11	1,390	460	43	255	0	218	0	413
Rental of Equipment	11	0	0	0	0	0	0	0	0
Transportation Expense	11	67,461	22,330	2,098	12,399	0	10,591	0	20,043
Fringe Benefits	11	261,258	86,476	8,125	48,019	0	41,018	0	77,620
Miscellaneous Other	11	0	0	0	0	0	0	0	0
Office Expense and Utilities	11	606	201	19	111	0	95	0	180
Uniforms	11	0	0	0	0	0	0	0	0
TOTAL T & D EXPENSE - MAINTENANCE		1,110,507	367,542	34,547	204,121	0	174,364	0	329,933
TOTAL T & D EXPENSE		3,184,941	1,635,772	71,981	423,083	266,103	174,364	0	613,638
CUSTOMER ACCOUNTS									
Employee Salaries - Supervision	12	1,405	0	0	0	0	0	1,374	31
Employee Salaries - Meter Reading	13	177,426	0	0	0	0	0	177,426	0
Employee Salaries - Billing	12	591,171	0	0	0	0	0	578,107	13,065
Fuel for Power Production	12	(91)	0	0	0	0	0	(89)	(2)
Material and Supplies	12	1,363	0	0	0	0	0	1,333	30
Outside Services	12	280,057	0	0	0	0	0	273,868	6,189
Outside Services - Mahoning	12	5,494	0	0	0	0	0	5,372	121
Rentals of Building/Real Property	12	0	0	0	0	0	0	0	0
Rental of Equipment	12	(490)	0	0	0	0	0	(479)	(11)
Transportation Expense	12	78,984	0	0	0	0	0	77,238	1,746
Advertising	12	0	0	0	0	0	0	0	0
Bad Debt Expense	12	190,805	0	0	0	0	0	186,588	4,217
Fringe Benefits	12	309,379	0	0	0	0	0	302,542	6,837
Miscellaneous Other	12	218	0	0	0	0	0	213	5
Communication Services	12	0	0	0	0	0	0	0	0
Office Expense, Utilities and Other	12	(1,108)	0	0	0	0	0	(1,083)	(24)
Uniforms	12	0	0	0	0	0	0	0	0
Postage	12	366,358	0	0	0	0	0	358,262	8,097
TOTAL CUSTOMER ACCOUNTING EXPENSE		2,000,972	0	0	0	0	0	1,960,672	40,300
ADMINISTRATIVE AND GENERAL EXPENSES									
Employee Salaries	14	1,083,945	509,996	134,192	53,222	33,494	21,896	246,706	84,439
Employee Pension & Benefits	16	2,604,660	1,282,274	334,438	141,954	87,517	59,647	478,736	220,094
Purchased Power	14	22,759	10,708	2,818	1,117	703	460	5,180	1,773
Accounting	14	0	0	0	0	0	0	0	0
Legal	14	0	0	0	0	0	0	0	0
Management Fees- Engineering	18	291,817	134,557	32,071	22,499	16,925	31,575	5,457	48,733
Management Fees- Customer Related	12	385,703	0	0	0	0	0	377,179	8,524
Management Fees- Employee related	16	303,900	149,610	39,021	16,563	10,211	6,959	55,857	25,680

SUEZ WATER PENNSYLVANIA INC.

COST OF SERVICE FOR THE TWELVE MONTHS ENDED DECEMBER 31, 2019, ALLOCATED TO COST FUNCTIONS

<u>Account</u>		<u>Cost of Service</u>	<u>Base</u>	<u>Max Day</u>	<u>Max Hour</u>	<u>Meters</u>	<u>Services</u>	<u>Billing & Collecting</u>	<u>Fire Service</u>
Management Fees- Other	14	4,378,078	2,059,886	542,006	214,964	135,283	88,437	996,450	341,052
Outside Services	14	246,794	116,117	30,553	12,118	7,626	4,985	56,170	19,225
Outside Services - Mahoning	14	10,425	4,905	1,291	512	322	211	2,373	812
Rental of Building/Real Property	14	60,451	28,442	7,484	2,968	1,868	1,221	13,759	4,709
Rental of Equipment	14	39,180	18,434	4,850	1,924	1,211	791	8,917	3,052
Transportation Expense	14	118,628	55,815	14,686	5,825	3,666	2,396	27,000	9,241
Insurance - General Liability	14	4,935	2,322	611	242	152	100	1,123	384
Insurance -Workman's Compensation	14	110,717	52,092	13,707	5,436	3,421	2,236	25,199	8,625
Advertising	14	3,674	1,729	455	180	114	74	836	286
Rate Case Expense - Amort	18	189,000	87,148	20,771	14,572	10,962	20,450	3,534	31,563
Regulatory Commission Expense	18	270,077	124,533	29,681	20,823	15,664	29,222	5,050	45,103
Fringe Benefits	16	(2,834,345)	(1,395,348)	(363,930)	(154,472)	(95,234)	(64,906)	(520,953)	(239,502)
Miscellaneous Other - Transfer Fringe Benefits	16	48,767	24,008	6,262	2,658	1,639	1,117	8,963	4,121
Membership Dues	14	0	0	0	0	0	0	0	0
Reg Fees for Conventions	14	0	0	0	0	0	0	0	0
Communication Services	14	0	0	0	0	0	0	0	0
Office Expenses and Utilities	14	482,593	227,060	59,745	23,695	14,912	9,748	109,838	37,594
Uniforms, Materials and Supplies and Other	14	81,002	38,111	10,028	3,977	2,503	1,636	18,436	6,310
Postage	14	0	0	0	0	0	0	0	0
Subscriptions	14	0	0	0	0	0	0	0	0
Travel	14	0	0	0	0	0	0	0	0
TOTAL A & G EXPENSE		7,902,760	3,532,398	920,740	390,777	252,958	218,255	1,925,812	661,819
Total Operation & Maintenance Expenses		19,259,294	10,307,622	1,987,404	813,860	519,061	392,819	3,886,484	1,352,243
DEPRECIATION EXPENSE									
Water Source Structures	2	82,824	63,261	19,116	0	0	0	0	447
Collection and Impounding Reservoirs	1	7,983	7,928	0	0	0	0	0	57
Lakes, River and Other Intakes	2	214,637	163,940	49,538	0	0	0	0	1,159
Wells & Springs	2	18,004	13,751	4,155	0	0	0	0	97
Infiltration Galleries and Tunnels	2	400	306	92	0	0	0	0	2
Purification Buildings	2	472,455	360,861	109,043	0	0	0	0	2,551
Power Generation Equip	3	0	0	0	0	0	0	0	0
Electric Pumping Equipment	3	597,839	359,540	108,627	0	0	0	0	129,671
Oil Engine Pumping Equipment	3	3,833	2,305	696	0	0	0	0	831
Purification System - Treatment Structures	2	868,536	663,388	200,458	0	0	0	0	4,690
Purification System - Painting	2	39,209	29,948	9,049	0	0	0	0	212
Purification System - Chemical Treatment	2	598,011	456,761	138,021	0	0	0	0	3,229
Laboratory Equipment	2	4,514	3,448	1,042	0	0	0	0	24
T&D Structures and Improvements	6	12,150	5,170	490	2,863	0	0	0	3,628
Distribution Reservoirs and Standpipes	5	396,205	164,901	0	132,887	0	0	0	98,417
Distribution Mains	4	1,204,094	452,137	0	364,479	0	0	0	387,477
Transmission Mains	3	1,081,270	650,276	196,467	0	0	0	0	234,528

SUEZ WATER PENNSYLVANIA INC.

COST OF SERVICE FOR THE TWELVE MONTHS ENDED DECEMBER 31, 2019, ALLOCATED TO COST FUNCTIONS

<u>Account</u>		<u>Cost of Service</u>	<u>Base</u>	<u>Max Day</u>	<u>Max Hour</u>	<u>Meters</u>	<u>Services</u>	<u>Billing & Collecting</u>	<u>Fire Service</u>
Services	9	720,889	0	0	0	0	696,307	0	24,582
Meters	8	976,632	0	0	0	976,632	0	0	0
Hydrants	7	128,185	0	0	0	0	0	0	128,185
General Land and Land Rights .	14	6,374	2,999	789	313	197	129	1,451	497
Office Buildings	14	239,971	112,906	29,708	11,783	7,415	4,847	54,617	18,694
Stores, Shop and Garage Buildings	14	178,839	84,144	22,140	8,781	5,526	3,613	40,704	13,932
Miscellaneous Structures and Improvements	14	17,015	8,006	2,106	835	526	344	3,873	1,325
Other Plant and Miscellaneous Equipment	14	8,424	3,963	1,043	414	280	170	1,917	656
Office Furniture and Equipment	14	33,217	15,629	4,112	1,631	1,026	671	7,580	2,588
Computer Software	14	80,761	37,998	9,998	3,965	2,496	1,631	18,381	6,291
Computer Software-CIS Implementation	12	5,653	0	0	0	0	0	5,528	125
Transportation Equipment	14	215	101	27	11	7	4	49	17
Stores Equipment	14	0	0	0	0	0	0	0	0
Tools and work Equipment	14	48,767	22,945	6,037	2,394	1,507	985	11,099	3,799
Shop Equipment	14	109,759	51,642	13,588	5,389	3,392	2,217	24,981	8,550
Power Operated Equipment	14	0	0	0	0	0	0	0	0
Communication Equipment	14	555,964	261,581	88,828	27,298	17,179	11,230	126,537	43,310
Miscellaneous Equipment	14	10,332	4,861	1,279	507	319	209	2,352	805
Total Depreciation Expense		8,722,962	4,004,693	996,452	563,550	1,016,482	722,357	299,050	1,120,377
Amortization of Acquisition Adjustment	18	57,744	28,628	6,346	4,452	3,349	6,248	1,080	9,643
Amortization of Regulatory Liability	18	(265,198)	(122,283)	(29,145)	(20,447)	(15,381)	(28,894)	(4,959)	(44,288)
Taxes Other Than Income									
Real Estate	18	318,178	146,712	34,968	24,532	18,454	34,427	5,950	53,136
Payroll Taxes	16	650,213	320,100	83,487	35,437	21,847	14,890	119,509	54,943
Total Taxes, Other Than Income		968,391	466,812	118,455	59,968	40,301	49,317	125,459	108,079

SUEZ WATER PENNSYLVANIA INC.

COST OF SERVICE FOR THE TWELVE MONTHS ENDED DECEMBER 31, 2019, ALLOCATED TO COST FUNCTIONS

<u>Account</u>		<u>Cost of Service</u>	<u>Base</u>	<u>Max Day</u>	<u>Max Hour</u>	<u>Meters</u>	<u>Services</u>	<u>Billing & Collecting</u>	<u>Fire Service</u>
Income Taxes	18	5,519,128	2,544,870	606,552	425,525	320,109	597,170	103,208	921,694
Utility Income Available for Return	18	19,356,334	8,925,206	2,127,261	1,492,373	1,122,667	2,094,355	361,963	3,232,508
Total Cost of Service		53,618,655	26,153,546	5,813,326	3,339,282	3,006,589	3,833,372	4,772,285	6,700,256
Less: Other Water Revenues	19	405,611	197,857	43,968	25,270	22,755	29,042	35,978	50,742
Total Cost of Service Related to Sales of Water		<u>53,213,044</u>	<u>25,955,689</u>	<u>5,769,357</u>	<u>3,314,012</u>	<u>2,983,834</u>	<u>3,804,330</u>	<u>4,736,307</u>	<u>6,649,514</u>
Reallocation of Public Fire	20	0	0	0	0	3,438,063	0	0	(3,438,063)
Total		<u>\$ 53,213,044</u>	<u>\$ 25,955,689</u>	<u>\$ 5,769,357</u>	<u>\$ 3,314,012</u>	<u>\$ 6,421,897</u>	<u>\$ 3,804,330</u>	<u>\$ 4,736,307</u>	<u>\$ 3,211,451</u>



Principles of Water Rates, Fees, and Charges

AWWA MANUAL M1
Sixth Edition



**American Water Works
Association**

DISTRIBUTING COSTS TO CUSTOMER CLASSES 81

Table III.2-3 Unit costs of service—Base-extra capacity method (test year)

Line No.	Unit Cost Component	Rate of Return Percentage	Total	Base	Extra Capacity		Customer Costs		Direct Fire Protection Services
					Maximum Day	Maximum Hour*	Meters and Services	Billing and Collecting	
Units of Service									
1	Total System			2,766,000 1,000 gal	8,402 1,000 gpd	12,243 1,000 gpd	17,695 equiv. meters	200,868 bills	
O&M Expense									
2	Total		\$6,837,000	\$3,202,390	\$955,048	\$319,072	\$989,367	\$1,288,624	\$82,498
3	Unit Cost, \$/Unit			\$1.1578	\$113.6740	\$26.0613	\$55.9122	\$6.4153	
Depreciation Expense									
4	Total		\$1,242,000	\$548,063	\$271,740	\$167,816	\$216,789		\$37,592
5	Unit Cost, \$/Unit			\$0.1981	\$32.3436	\$13.7069	\$12.2514		
Nonrate Revenue									
6	Total		(\$78,000)	(\$29,000)	(\$12,000)	(\$4,000)	(\$14,000)	(\$18,000)	(\$1,000)
7	Unit Rate Base, \$/Unit			-\$0.0105	-\$1.4283	-\$0.3267	-\$0.7912	-\$0.0896	
Rate Base									
8	Total Rate Base		\$48,558,000	\$23,572,110	\$11,175,548	\$6,558,537	\$5,974,569		\$1,277,236
9	Unit Rate Base, \$/Unit			\$8.5221	\$1,330.1621	\$535.6903	\$337.6416		
Unit Return on Rate Base									
10	Outside-City, \$/Unit Return on Rate Base (Input)	8.00%		\$0.6818	\$106.4130	\$42.8552	\$27.0113		
11	Outside-City Units of Service			230,000	788	945	34		
12	Outside-City Rate Base		\$3,525,629	\$1,960,081	\$1,047,730	\$506,337	\$11,480		
13	Outside-City Return on Rate Base		\$282,050	\$156,807	\$83,818	\$40,507	\$918		
14	Inside City, \$/Unit Return on Rate Base (Input)	5.20%		\$0.4431	\$69.1562	\$27.8510	\$17.5543		
15	Inside-City Units of Service			2,536,000	7,614	11,298	17,661		
16	Inside-City Rate Base		\$45,032,371	\$21,612,029	\$10,127,818	\$6,052,200	\$5,963,089		\$1,277,236
17	Inside-City Return on Rate Base		\$2,341,270	\$1,123,627	\$526,553	\$314,659	\$310,026		\$66,405
18	Total System Return on Rate Base (Calculated)	5.40%	\$2,623,320	\$1,280,434	\$610,372	\$355,166	\$310,944		\$66,405
19	Inside City, \$/Unit (Line 3 + 5 + 7 + 14)			\$1.7885	\$213.7455	\$67.2925	\$84.9268	\$6.3257	\$185,495
20	Outside City, \$/Unit (Line 3 + 5 + 7 + 10)			\$2.0272	\$251.0023	\$82.2967	\$94.3838	\$6.3257	

* Maximum-hour demand in excess of maximum-day demand.

Table III.2-5 Cost distribution to customer classes—Base-extra capacity method (test year)

Line No.	Item	Total Cost of Service	Base Demand	Extra Capacity		Customer Costs		Direct Fire Protection Services
				Maximum Day	Maximum Hour*	Meters and Services	Billing and Collecting	
Inside City:								
1	Unit Costs of Service, \$/Unit		\$1.7885 per 1,000 gal	\$213.7455 per 1,000 gal	\$67.2925 per 1,000 gal	\$81.9268 per equiv. meters	\$6.3257 per bill	
Residential								
2	Units of Service		968,000	3,978	3,978	15,652	185,760	
3	Allocated Costs of Service	\$5,353,588	\$1,731,266	\$850,297	\$267,695	\$1,329,274	\$1,175,056	
Commercial								
4	Units of Service		473,000	1,296	1,620	1,758	14,610	
5	Allocated Costs of Service	\$1,473,864	\$845,960	\$276,991	\$109,005	\$149,301	\$92,608	
Industrial								
6	Units of Service		1,095,000	1,500	1,500	251	420	
7	Allocated Costs of Service	\$2,403,936	\$1,958,406	\$320,618	\$100,939	\$21,317	2,657	
Fire Protection Service								
8	Units of Service			840	4,200			
9	Allocated Costs of Service	\$647,669		\$179,546	\$282,628			\$185,495
10	Total Inside-City Allocated Cost of Service	\$9,879,058	\$4,535,632	\$1,627,452	\$760,267	\$1,499,892	\$1,270,320	\$185,495
Outside City:								
11	Unit Costs of Service, \$/Unit		\$2.0272 1,000 gal	\$251.0023 1,000 gal	\$82.2967 1,000 gal	\$94.3838 per equiv. meters	\$6.3257 per bill	
Wholesale								
12	Units of Service		230,000	788	945	34	48	
13	Allocated Costs of Service	\$745,262	\$466,255	\$197,707	\$77,787	\$3,209	\$304	
14	Total System Allocated Cost of Service	\$10,624,320	\$5,001,887	\$1,825,160	\$838,054	\$1,503,101	\$1,270,624	\$185,495

* Maximum-hour demand in excess of maximum-day demand.

applied to customer class equivalent meter units of service to determine allocated cost of service. Units based on equivalent 5/8-in. meters allow for the fact that customer costs will vary and tend to increase with the size of the customer meter and service.

Billing and collecting costs may be related to the number of bills issued and, in turn, distributed to customer classes on the basis of the number of bills rendered to customers within each class. For the example, customer class responsibility is determined by applying the billing and collecting unit cost to the total estimated number of bills in each customer class rendered for the average rate year.

The base-extra capacity and customer costs, summarized by customer class, constitute the costs of service to be recovered from the respective classes of customers involved. This summation also identifies the responsibility of each class for the functional costs.

DISTRIBUTING COSTS TO CUSTOMER CLASSES: COMMODITY-DEMAND METHOD

As noted in the previous chapter, there are two generally accepted methods of allocating costs to cost components: the base-extra capacity method and the commodity-demand method. Costs are distributed to customer classes under the commodity-demand

ALLOCATING REVENUE REQUIREMENTS TO COST COMPONENTS 67

Table III. 1-3 Allocation of O&M expense and nonrate revenue—Base-extra capacity method (test year)

Line No.	Item	Total	Base	Extra Capacity		Customer Costs		Direct Fire Protection Service
				Maximum Day	Maximum Hour*	Meters and Services	Billing and Collection	
1	Source of Supply	\$270,000	\$270,000	\$0	\$0	\$0	\$0	\$0
	Pumping							
2	Purchased Power	777,000	699,300	77,700				
3	Other	579,000	376,350	202,650				
	Water Treatment							
4	Chemicals	363,000	363,000					
5	Other	471,000	306,150	164,850				
	Transmission & Distribution							
6	Storage	78,000	7,800		70,200			
7	Transmission Mains	156,000	101,400	54,600				
8	Distribution Mains	234,000	105,300	58,500	70,200			
9	Meters & Services	465,000				465,000		
10	Hydrants	39,000						39,000
11	Other	216,000	41,040	21,600	41,040	103,680		8,640
	Customer Accounting							
12	Meter Reading & Collection	741,000					741,000	
13	Uncollectable Accounts	132,000	62,040	18,480	7,920	18,480	23,760	1,320
	Administrative & General							
14	Salaries	582,000	218,630	89,629	32,596	101,073	131,645	8,428
15	Employee Benefits	531,000	199,471	81,775	29,740	92,216	120,109	7,689
16	Insurance	405,000	152,139	62,371	22,683	70,334	91,608	5,865
17	Other	798,000	299,770	122,893	44,694	138,584	180,502	11,556
18	Total O&M Expenses	6,837,000	3,202,390	955,048	319,072	989,367	1,288,624	82,498
19	Nonrate Revenue	(\$78,000)	(\$29,000)	(\$12,000)	(\$4,000)	(\$14,000)	(\$18,000)	(\$1,000)

* Maximum-hour demand in excess of maximum-day demand.

agreements may dictate that demand portions of purchased water costs be allocated to demand components.

Demand costs are associated with providing facilities to meet the peak rates of use, or demands, placed on the system by the customers. They include capital-related costs on plant designed to meet peak requirements, plus the associated O&M expenses. This cost component may be broken down into costs associated with meeting specific demands, such as maximum-day, maximum-hour demands, or other periods of time that may be appropriate to the utility that has to meet these demands. In the commodity-demand method, costs must be carefully separated between commodity costs and demand costs. The appropriate allocation factors between commodity and demand costs usually vary among systems and should be determined on the basis of the design criteria for each system.

Table IV.7-1 Fixed charges by meter size

Meter Size, inches	Billing and Collecting,* \$	Meters and Services,† \$	Total Meter Charge, \$
¾	6.33	7.08	13.41
¾	6.33	7.78	14.11
1	6.33	9.91	16.24
1½	6.33	12.74	19.07
2	6.33	20.52	26.85
3	6.33	77.85	84.18
4	6.33	99.08	105.41
6	6.33	148.62	154.95
8	6.33	205.24	211.57

* From Table III.2-5, rounded to nearest cent.

† Based on inside-city unit costs of service, Table III.2-5 as follows: \$84.927 per equivalent meter per year divided by 12 bills = \$7.08 per equivalent meter. Meter equivalents based on Appendix B.

made that utilities invest in facilities to provide capacity, and that these costs must be recovered regardless of the amount of water used during a given period. This is sometimes referred to as a *readiness to serve* charge. The requirement to recover costs without regard to the volume of sales is real, but it does not necessarily suggest that fixed charges should represent a large portion of total revenue requirements. The use of a water system is reflected in both potential and average usage patterns, so a continued reliance on volumetric charges has value from an equity perspective.

The extent to which a strategy of large service charges is employed is frequently limited as a result of concerns over impacts on affordability for smaller customers, combined with the practical limitations on a utility's ability to recover large portions of its revenue requirements through service or meter charges.

Minimum Charges and Water Allowance

A minimum charge is a fixed fee that includes an allowance for water consumption. The allowance is the minimum volume of consumption for which a customer is billed regardless of whether or not the water is used. The allowance is generally set at a relatively low level to equal an amount that is typically used by most customers in a month. Some utilities use an increasingly larger water allowance for larger size meters.

The minimum charge may be viewed as a means to recover a portion of fixed costs associated with investments to which all customers should contribute, because the utility continues to incur the fixed costs regardless of whether customers consumed water during that billing period.

This charge typically recovers the same costs as the billing and service charges plus the cost of the allotted consumption allowance multiplied by the consumption rate. For example, if a utility had a service charge of \$13.41 per equivalent ¾-in. meter and a consumption charge of \$2.94 per thousand gallons (based on the residential cost per thousand gallons as displayed in Table IV.2-2) and it wanted to set a minimum charge that included 2,000 gallons, the minimum charge would be \$19.29 per equivalent meter ($\$13.41 + [2 \times \$2.94]$). Table IV.7-2 shows how to calculate a minimum charge by meter size. This example assumes the service charges presented in Table IV.2-1 and a consumption charge of \$2.94 per thousand gallons for all meter sizes.

Minimum charges generally result in the highest fixed fees of those fees discussed herein. Often they are criticized for being unfair in that they charge a customer for consumption even when the customer does not use the allotted amount of water.

PENNSYLVANIA SUBURBAN WATER COMPANY

CALCULATION OF THE TOTAL DIRECT COSTS APPLICABLE TO 5/8-INCH CUSTOMER CHARGES

Description	Exhibit No. 50-B Reference	Meters	Services	Billing & Collecting	Meter Reading	Total
Direct Costs:						
T & D O&M Expenses	p. A-39	\$3,221,555	\$1,467,756			\$4,689,311
Customer Accounting Exps.	p. A-39			8,215,662	1,276,766	9,492,428
Employee Health Plans	p. A-39	1,521,970	680,457	1,899,107	385,190	4,486,724
Payroll Taxes	p. A-42	262,363	117,300	327,376	66,401	773,440
PUC/OCA Assessments	p. A-42	123,215	132,978	123,047	19,863	399,103
Subtotal Expenses		5,129,103	2,398,491	10,565,192	1,748,220	19,841,006
Depreciation:						
Meters	p. A-41	3,922,247				3,922,247
Services	p. A-41		3,529,954			3,529,954
Office Buildings	p. A-40	47,820	21,804	122,002	18,979	210,605
Office Furniture/Equipment	p. A-41	16,937	7,723	43,210	6,722	74,592
Computers	p. A-41	478,301	218,086	1,220,288	189,834	2,106,509
Subtotal Depreciation		4,465,305	3,777,567	1,385,500	215,535	9,843,907
Rate Base:						
Meters	p. A-45	53,731,923				53,731,923
Services	p. A-45		103,681,155			103,681,155
Office Buildings/Land	p. A-44	1,400,415	638,531	3,572,873	555,812	6,167,631
Office Furniture/Equipment	p. A-45	138,898	63,331	354,367	55,127	611,723
Computers	p. A-45	1,202,476	548,279	3,067,872	477,252	5,295,879
Subtotal Rate Base		56,473,712	104,931,296	6,995,112	1,088,191	169,488,311
Return @	9.15% of Rate Base	5,166,789	9,600,181	639,984	99,559	15,506,513
Income Taxes @	48.60% of Return	2,511,297	4,666,129	311,062	48,390	7,536,878
Subtotal Expenses, Depreciation Return and Taxes		17,272,494	20,442,368	12,901,738	2,111,704	52,728,304
Less: Other Revenues	p. A-43	(376,507)	(406,339)	(375,993)	(60,694)	(1,219,533)
Total Direct Customer Costs		16,895,987	20,036,029	12,525,745	2,051,010	51,508,771
Plus: Unrecovered Public Fire		7,253,648				7,253,648
Total		24,149,635	20,036,029	12,525,745	2,051,010	58,762,419
Number of Units		422,340	390,001	4,561,548	4,561,548	
Cost Per Monthly Bill		\$4.77	\$4.28	\$2.75	\$0.45	\$12.25

PENNSYLVANIA SUBURBAN WATER COMPANY

COST OF SERVICE AS OF JUNE 30, 2004, AT REVENUE LEVEL PROPOSED UNDER SUPPLEMENT NO.49 TO TARIFF WATER-PA. P.U.C. NO. 1,
ALLOCATED TO COST FUNCTIONS

ACCOUNT (1)	FACTOR REF (2)	COST OF SERVICE (3)	BASE (4)	---EXTRA CAPACITY---		CUSTOMER FACILITIES		CUSTOMER ACCOUNTING		-----FIRE SERVICE-----		
				MAX DAY (5)	MAX HOUR (6)	METERS (7)	SERVICES (8)	BILLING & COLLECTING (9)	METER READING (10)	PRIVATE FIRE (11)	PUBLIC FIRE (12)	RESIDENTIAL FIRE (13)
OPERATION AND MAINTENANCE EXPENSES												
SOURCE OF SUPPLY EXPENSES												
-OPERATION-												
6011												
Operation Labor												
Treatment Plants & Wells	2	163,929	116,274	46,835						148	672	
Booster Stations	3	9,265	6,237	2,486						126	412	4
6201												
Materials and Supplies												
Treatment Plants & Wells	2	1,054,303	747,817	301,214						949	4,323	
Booster Stations	3	59,590	40,116	15,988						810	2,652	24
6501												
Transportation												
Treatment Plants & Wells	2	691,554	490,520	197,577						622	2,835	
Booster Stations	3	39,088	26,314	10,487						532	1,739	16
6571												
General Liability												
Treatment Plants & Wells	2	1,789	1,269	511						2	7	
Booster Stations	3	102	69	27						1	5	
6751												
Miscellaneous												
Treatment Plants & Wells	2	56,580	40,132	16,165						51	232	
Booster Stations	3	3,199	2,154	858						44	142	1
Total Operation		2,079,399	1,470,902	592,148						3,285	13,019	45
-MAINTENANCE-												
6012												
Maintenance Labor												
Treatment Plants & Wells	2	421,594	299,037	120,449						379	1,729	
Booster Stations	3	156,725	105,508	42,049						2,131	6,974	63
6202												
Materials and Supplies												
Treatment Plants & Wells	2	70,376	49,918	20,106						63	289	
Booster Stations	3	26,162	17,613	7,019						356	1,164	10
6502												
Transportation												
Treatment Plants & Wells	2	71,551	50,752	20,442						64	293	
Booster Stations	3	26,599	17,905	7,137						362	1,184	11
6752												
Miscellaneous												
Treatment Plants & Wells	2	1,689	1,197	483						2	7	
Booster Stations	3	629	423	169						9	28	
Total Maintenance		775,325	542,353	217,854						3,366	11,668	84

PENNSYLVANIA SUBURBAN WATER COMPANY

COST OF SERVICE AS OF JUNE 30, 2004, AT REVENUE LEVEL PROPOSED UNDER SUPPLEMENT NO.49 TO TARIFF WATER-PA. P.U.C. NO. 1, ALLOCATED TO COST FUNCTIONS

ACCOUNT (1)	FACTOR REF (2)	COST OF SERVICE (3)	BASE (4)	---EXTRA CAPACITY---		CUSTOMER FACILITIES		CUSTOMER ACCOUNTING		-----FIRE SERVICE-----			
				MAX DAY (5)	MAX HOUR (6)	METERS (7)	SERVICES (8)	BILLING & COLLECTING (9)	METER READING (10)	PRIVATE FIRE (11)	PUBLIC FIRE (12)	RESIDENTIAL FIRE (13)	
OPERATION AND MAINTENANCE EXPENSES, CONT.													
SOURCE OF SUPPLY EXPENSES, CONT.													
-MISCELLANEOUS-													
6101		Water Purchased for Resale	1	8,011,184	7,954,304						10,415	46,465	
		Total Miscellaneous		8,011,184	7,954,304						10,415	46,465	
		Total Source of Supply Expenses		10,865,908	9,967,559	810,002					17,066	71,152	129
MISCELLANEOUS-													
6151		Power Purchased	1	9,340,848	9,274,528						12,143	54,177	
		Total Power Expenses		9,340,848	9,274,528						12,143	54,177	
WATER TREATMENT EXPENSES													
-OPERATION-													
6013		Operating Labor	2	5,470,242	3,880,043	1,562,848					4,923	22,428	
6153		Power Puchased - Treatment	1	799,060	793,386						1,039	4,635	
6183		Chemicals	1	2,512,791	2,494,950						3,267	14,574	
6203		Materials and Supplies	2	456,372	323,705	130,385					411	1,871	
6363		Contractor Services	2	686,887	487,209	196,244					618	2,816	
6503		Transportation	2	105,454	74,799	30,128					95	432	
6753		Miscellaneous	2	178,185	126,387	50,907					160	731	
		Total Operation		10,208,991	8,180,479	1,970,512					10,513	47,487	
-MAINTENANCE-													
6014		Maintenance Labor	2	2,898,243	2,055,724	828,028					2,608	11,883	
6204		Materials and Supplies	2	69,765	49,484	19,932					63	286	
6364		Contractor Services	2	231,087	163,910	66,022					208	947	
6424		Equipment Rental	2	638	452	182					1	3	
6504		Transportation	2	35,118	24,909	10,033					32	144	
6754		Miscellaneous	2	405	287	116						2	
		Total Maintenance		3,235,256	2,294,766	924,313					2,912	13,265	
		Total Water Treatment Expenses		13,444,247	10,475,245	2,894,825					13,425	60,752	

PENNSYLVANIA SUBURBAN WATER COMPANY

COST OF SERVICE AS OF JUNE 30, 2004, AT REVENUE LEVEL PROPOSED UNDER SUPPLEMENT NO.49 TO TARIFF WATER-PA. P.U.C. NO. 1, ALLOCATED TO COST FUNCTIONS

ACCOUNT (1)	FACTOR REF (2)	COST OF SERVICE (3)	BASE (4)	---EXTRA MAX DAY (5)	CAPACITY-- MAX HOUR (6)	CUSTOMER FACILITIES		CUSTOMER ACCOUNTING BILLING & COLLECTING (9)	METER READING (10)	-----FIRE SERVICE-----			
						METERS (7)	SERVICES (8)			PRIVATE FIRE (11)	PUBLIC FIRE (12)	RESIDENTIAL FIRE (13)	
OPERATION AND MAINTENANCE EXPENSES, CONT.													
TRANSMISSION AND DISTRIBUTION EXPENSES													
-OPERATION-													
6015		Operating Labor											
		Supervision & Engineering	13	278,829	39,399	2,091	34,380	138,549	15,754		33,822	14,806	28
		Maps & Records	13	535,415	75,654	4,016	66,017	266,046	30,251		64,946	28,431	54
		Storage Facilities	5	363,829	169,508		170,744				5,494	17,937	146
		12 inch and Over Mains	3	88,574	59,628	23,764					1,205	3,942	35
		Under 12 inch Mains	4	479,014	217,137		218,671				10,059	32,860	287
		Hydrants	7	122,335							9,297	113,038	
		Removing & Resetting Meters	8	1,833,440				1,498,837			334,603		
		Miscellaneous Meter Expense	8	85,396				69,811			15,585		
		Services on Customers' Premise	9	185,091					178,391		6,700		
6155		Power Purchased	1	140,928	139,928						183	817	
6205		Materials and Supplies	13	1,019,175	144,009	7,644	125,664	506,429	57,583		123,626	54,118	102
6315		Contractor Services	13	213,515	30,170	1,601	26,326	106,096	12,064		25,899	11,338	21
6425		Property and Equipment Rental	13	13,667	1,931	103	1,685	6,791	772		1,658	726	1
6505		Transportation	13	835,047	117,992	6,263	102,961	414,935	47,180		101,291	44,341	84
6755		Miscellaneous	13	30,016	4,241	225	3,701	14,915	1,696		3,641	1,594	3
		Total Operation		6,224,271	999,597	45,707	750,149	3,022,409	343,691		738,009	323,948	761
-MAINTENANCE-													
6016		Maintenance Labor											
		Supervision & Engineering	14	232,460	64,298	4,975	52,141	9,810	55,395		9,205	36,566	70
		Structures & Improvements	5	58,204	27,117		27,316				879	2,869	23
		12 inch and Over Mains	3	266,739	179,568	71,566					3,628	11,870	107
		Under 12 inch Mains	4	1,580,439	716,413		721,471				33,189	108,418	948
		Services	9	825,570					795,684		29,886		
		Meters	8	172,470				140,994			31,476		
		Fire Hydrants	7	434,925							33,054	401,871	
6206		Materials and Supplies	14	324,391	89,727	6,942	72,761	13,689	77,302		12,846	51,027	97
6316		Contractor Services	14	760,986	210,489	16,285	170,689	32,114	181,343		30,135	119,703	228
6416		Equipment Rental	14	3,489	965	75	783	147	831		138	549	1

PENNSYLVANIA SUBURBAN WATER COMPANY

COST OF SERVICE AS OF JUNE 30, 2004, AT REVENUE LEVEL PROPOSED UNDER SUPPLEMENT NO.49 TO TARIFF WATER-PA. P.U.C. NO. 1, ALLOCATED TO COST FUNCTIONS

ACCOUNT (1)	FACTOR REF (2)	COST OF SERVICE (3)	BASE (4)	---EXTRA MAX DAY (5)	CAPACITY-- MAX HOUR (6)	CUSTOMER FACILITIES METERS (7)	----- SERVICES (8)	CUSTOMER ACCOUNTING BILLING & COLLECTING (9)	METER READING (10)	-----FIRE SERVICE----- PRIVATE FIRE (11)	PUBLIC FIRE (12)	RESIDENTIAL FIRE (13)
OPERATION AND MAINTENANCE EXPENSES, CONT.												
TRANSMISSION AND DISTRIBUTION EXPENSES, CONT.												
-MAINTENANCE-, CONT.												
6506 Transportation	14	28,162	7,790	603	6,317	1,188	6,711			1,115	4,430	8
6586 General Liability	14	1,338	371	29	300	56	319			53	210	
6756 Miscellaneous	14	27,192	7,521	582	6,099	1,148	6,480			1,077	4,277	8
Total Maintenance		4,716,365	1,304,259	101,057	1,057,877	199,146	1,124,065			186,681	741,790	1,490
Total Transmission and Distribution Expenses		10,940,636	2,303,856	146,764	1,808,026	3,221,555	1,467,756			924,690	1,065,738	2,251
CUSTOMERS' ACCOUNTING AND COLLECTING EXPENSES												
6017 Labor	12	2,724,091						2,165,925	532,832	24,789	545	
Meter Reading	11	750,765							743,933	6,832		
Other	10	3,053,528						3,024,825		27,787	916	
6367 Contractor Services	10	182,535						180,819		1,661	55	
6707 Bad Debt Expense	10	2,852,256						2,825,444		25,956	856	
6757 Miscellaneous	10	18,825						18,648		171	6	
Total Customers' Accounting and Collecting Expenses		9,582,000						8,215,661	1,276,765	87,196	2,378	
ADMINISTRATIVE AND GENERAL EXPENSES												
-OPERATION-												
6018 Labor	15	5,720,734	1,947,909	660,173	310,064	552,051	251,712	1,408,445	219,104	176,199	194,505	572
6038 Officers Labor	15	1,535,915	522,978	177,245	83,247	148,216	67,580	378,142	58,826	47,306	52,221	154
6048 Employee Health Plans	16	13,421,252	5,302,737	1,798,448	842,855	1,521,970	680,457	1,899,107	385,190	463,033	526,113	1,342
6158 Power	15	35,835	12,202	4,135	1,942	3,458	1,577	8,823	1,372	1,104	1,218	4
6208 Materials and Supplies	15	389,649	132,675	44,965	21,119	37,601	17,145	95,932	14,924	12,001	13,248	39
6318 Contractor Services - Engineering	15	10,607	3,611	1,224	575	1,024	467	2,611	406	327	361	1
6328 Contractor Services - Accounting	15	336,233	114,487	38,801	18,224	32,446	14,794	82,781	12,878	10,356	11,432	34
6338 Contractor Services - Legal	15	106,605	36,299	12,302	5,778	10,287	4,691	26,246	4,083	3,283	3,625	11

PENNSYLVANIA SUBURBAN WATER COMPANY

COST OF SERVICE AS OF JUNE 30, 2004, AT REVENUE LEVEL PROPOSED UNDER SUPPLEMENT NO.49 TO TARIFF WATER-PA. P.U.C. NO. 1, ALLOCATED TO COST FUNCTIONS

ACCOUNT (1)	FACTOR REF (2)	COST OF SERVICE (3)	BASE (4)	---EXTRA MAX DAY (5)	CAPACITY--- MAX HOUR (6)	CUSTOMER FACILITIES METERS (7)	SERVICES (8)	CUSTOMER ACCOUNTING BILLING & COLLECTING (9)	METER READING (10)	-----FIRE SERVICE----- PRIVATE FIRE (11)	PUBLIC FIRE (12)	RESIDENTIAL FIRE (13)
OPERATION AND MAINTENANCE EXPENSES, CONT.												
ADMINISTRATIVE AND GENERAL EXPENSES												
-OPERATION-, CONT.												
6348 Contractor Services - Mgmt Fee	15	3,400,093	1,157,731	392,371	184,285	328,109	149,604	837,103	130,224	104,723	115,603	340
6358 Contractor Services - Testing	15											
6368 Contractor Services - Other	15	2,000,865	681,295	230,900	108,447	193,083	88,038	492,613	76,633	61,627	68,029	200
6418 Rent	15	83,329	28,374	9,616	4,516	8,041	3,666	20,516	3,192	2,567	2,833	8
6508 Transportation	15	3,576-	1,218-	413-	194-	345-	157-	880-	137-	110-	122-	
6578 General Liability Insurance	15	3,761,685	1,280,854	434,098	203,883	363,003	165,514	926,127	144,073	115,860	127,897	376
6608 Advertising	15	17,938	6,109	2,070	972	1,731	789	4,416	687	552	610	2
6668 Rate Case Amortization	19	1,053,965	494,837	111,193	119,414	77,150	83,263	77,045	12,437	30,354	48,061	211
6668 Meger Amortization	15											
6668 Miscellaneous Amortization	15											
6758 A & G Miscellaneous	15											
Labor	15	733,699	249,824	84,669	39,766	70,802	32,283	180,637	28,101	22,598	24,946	73
Other	15	4,665,634	1,588,647	538,414	252,877	450,234	205,288	1,148,679	178,694	143,702	158,632	467
Total Administrative and General Expenses		37,270,462	13,559,351	4,540,211	2,197,770	3,798,861	1,766,711	7,588,343	1,270,687	1,195,482	1,349,212	3,834
Utility Plant Acquisition Adj. Amort.	17	364,307-	171,043-	42,077-	57,961-	20,583-	37,305-	4,153-	656-	10,310-	20,110-	109-
Total Operation and Maintenance Expenses		91,079,794	45,409,496	8,349,725	3,947,835	6,999,833	3,197,162	15,799,851	2,546,796	2,239,692	2,583,299	6,105
503 DEPRECIATION EXPENSE												
304.2 Power and Pumping Structures												
Major Treatment Plants	2	180,723	128,186	51,633						163	741	
Other Structures	3	280,295	188,695	75,203						3,812	12,473	112
304.3 Purification Buildings												
Major Treatment Plants	2	1,836,205	1,302,420	524,604						1,653	7,528	
Other Structures	2	115,051	81,605	32,870						104	472	
304.61 Office Buildings	15	495,542	168,732	57,186	26,858	47,820	21,804	122,002	18,979	15,263	16,848	50

PENNSYLVANIA SUBURBAN WATER COMPANY

COST OF SERVICE AS OF JUNE 30, 2004, AT REVENUE LEVEL PROPOSED UNDER SUPPLEMENT NO.49 TO TARIFF WATER-PA. P.U.C. NO. 1, ALLOCATED TO COST FUNCTIONS

ACCOUNT (1)	FACTOR REF (2)	COST OF SERVICE (3)	BASE (4)	---EXTRA CAPACITY---		CUSTOMER FACILITIES		CUSTOMER ACCOUNTING		-----FIRE SERVICE-----				
				MAX DAY (5)	MAX HOUR (6)	METERS (7)	SERVICES (8)	BILLING & COLLECTING (9)	METER READING (10)	PRIVATE FIRE (11)	PUBLIC FIRE (12)	RESIDENTIAL FIRE (13)		
503														
DEPRECIATION EXPENSE, CONT.														
304.62		Stores, Shop and Garage Bldgs.	15	192,555	65,565	22,221	10,436	18,582	8,472	47,407	7,375	5,931	6,547	19
304.63		Misc. Structures and Impr.	15	94,384	32,138	10,892	5,116	9,108	4,153	23,237	3,615	2,907	3,209	9
305		Collecting & Impounding Res.	1	477,804	474,412							621	2,771	
306		Lake, River & Other Intakes	2	167,665	118,925	47,902						151	687	
307		Wells and Springs	2	863,793	612,688	246,786						777	3,542	
310.4		Other Power Producing Equipment	6	3,395	2,302	859	171					14	49	
310.7		Oil Engine Pumping Equipment	6	411	278	104	21					2	6	
310.8		Hydraulic Pumping Equipment	2	107	76	31								
311		Electric Pumping Equipment												
		Pumping Equipment	6	1,643,818	1,114,673	415,886	82,684					6,740	23,671	164
		SCADA Equipment	6	205,055	139,047	51,879	10,314					841	2,953	21
320		Purification System												
		Structures	2	1,810,950	1,284,507	517,388						1,630	7,425	
		Wells & Boosters	2	35,836	25,419	10,238						32	147	
		Equipment	2	920,738	653,079	263,055						829	3,775	
		Computers	2	247,554	175,590	70,726						223	1,015	
		Painting	2	2,696	1,913	770						2	11	
		Filter Media	2	158,184	112,200	45,193						142	649	
330		Distr. Reservoirs & Standpipes												
		Tanks	5	710,051	330,813		333,226					10,722	35,006	284
		Tank Painting	5	501,005	233,418		235,122					7,565	24,700	200
331		Mains and Accessories												
		12 Inch and Over	3	2,099,824	1,413,601	563,383						28,558	93,442	840
		Under 12 Inch	4	7,572,994	3,432,838							159,033	519,507	4,544
333		Services	9	3,662,537					3,529,953			132,584		
334		Meters												
		Conventional	8	380,072				310,709				69,363		
		Remote	8	4,417,783				3,611,538				806,245		
335		Fire Hydrants	7	1,061,662								80,686	980,976	
340		Office Furniture and Equipment												
		Furniture	15	112,632	38,351	12,998	6,105	10,869	4,956	27,730	4,314	3,469	3,829	11
		Mechanical Equipment	15	62,876	21,408	7,256	3,408	6,068	2,767	15,480	2,408	1,937	2,138	6
		Computers	15	4,956,490	1,687,683	571,979	268,642	478,301	218,086	1,220,288	189,834	152,660	168,521	496

PENNSYLVANIA SUBURBAN WATER COMPANY

COST OF SERVICE AS OF JUNE 30, 2004, AT REVENUE LEVEL PROPOSED UNDER SUPPLEMENT NO.49 TO TARIFF WATER-PA. P.U.C. NO. 1, ALLOCATED TO COST FUNCTIONS

ACCOUNT (1)	FACTOR REF (2)	COST OF SERVICE (3)	BASE (4)	---EXTRA CAPACITY---		CUSTOMER FACILITIES		CUSTOMER ACCOUNTING		-----FIRE SERVICE-----		
				MAX DAY (5)	MAX HOUR (6)	METERS (7)	SERVICES (8)	BILLING & COLLECTING (9)	METER READING (10)	PRIVATE FIRE (11)	PUBLIC FIRE (12)	RESIDENTIAL FIRE (13)
503 DEPRECIATION EXPENSE, CONT.												
341												
Transportation Equipment												
Vehicles	15	23,540	8,014	2,717	1,276	2,272	1,036	5,796	902	725	800	2
Other	15	27,254	9,280	3,145	1,477	2,630	1,199	6,710	1,044	839	927	3
342												
Stores Equipment	15	3,336	1,136	385	181	322	147	821	128	103	113	
343.1												
Shop Equipment	15	15,052	5,124	1,737	816	1,453	662	3,706	576	464	512	2
343.2												
Tools & Work Equipment	General 15	369,257	125,732	42,612	30,014	35,633	16,247	90,911	14,143	11,373	12,555	37
344												
Laboratory Equipment												
Conventional	2	35,114	24,906	10,032						32	144	
Electronic	2	104,944	74,437	29,983						94	430	
345												
Tools & Work Equip.-Construction	15	550,909	187,584	63,575	29,859	53,163	24,240	135,634	21,100	16,968	18,731	55
346												
Communication Equipment	15	171,691	58,462	19,813	9,306	16,568	7,554	42,270	6,576	5,288	5,837	17
347												
Miscellaneous Equipment	15	13,105	4,462	1,512	710	1,265	577	3,226	502	404	446	1
Total Depreciation Expense		36,584,889	14,339,699	3,776,553	4,502,814	4,606,301	3,841,853	1,745,218	271,496	1,530,949	1,963,133	6,873
TAXES, OTHER THAN INCOME												
Federal and State Payroll Taxes	16	2,313,611	914,107	310,024	145,295	262,363	117,300	327,376	66,401	79,820	90,694	231
State Capital Stock Tax	18	2,666,128	1,258,680	305,272	418,315	150,636	269,812	36,259	5,599	74,918	145,837	800
P.U.C. Assessment	19	1,320,161	619,815	139,277	149,574	96,636	104,293	96,504	15,578	38,021	60,199	264
O.C.A. and S.B.A. Assessments	19	363,107	170,479	38,308	41,140	26,579	28,685	26,543	4,285	10,457	16,558	73
Local Property Taxes	18	484,997	228,969	55,532	76,096	27,402	49,082	6,596	1,018	13,628	26,529	145
Public Utility Realty Taxes	18	2,631,953	1,242,544	301,359	412,953	148,705	266,354	35,795	5,527	73,958	143,968	790
Total Taxes, Other Than Income		9,779,957	4,434,594	1,149,772	1,243,373	712,321	835,526	529,073	98,408	290,802	483,785	2,303
INCOME TAXES												
Federal Income Taxes	18	16,509,800	7,794,276	1,890,372	2,590,388	932,804	1,670,792	224,533	34,671	463,925	903,086	4,953
State Income Taxes	18	9,715,900	4,586,876	1,112,471	1,524,425	548,948	983,249	132,136	20,403	273,017	531,460	2,915
Deferred Taxes	18	18,012,200	8,503,559	2,062,397	2,826,114	1,017,689	1,822,835	244,966	37,826	506,143	985,267	5,404
ITC-Amortized	18	145,998-	68,924-	16,717-	22,907-	8,249-	14,775-	1,986-	307-	4,103-	7,986-	44-
Total Income Taxes		44,091,902	20,815,787	5,048,523	6,918,020	2,491,192	4,462,101	599,649	92,593	1,238,982	2,411,827	13,228

PENNSYLVANIA SUBURBAN WATER COMPANY

COST OF SERVICE AS OF JUNE 30, 2004, AT REVENUE LEVEL PROPOSED UNDER SUPPLEMENT NO.49 TO TARIFF WATER-PA. P.U.C. NO. 1,
ALLOCATED TO COST FUNCTIONS

ACCOUNT (1)	FACTOR REF (2)	COST OF SERVICE (3)	BASE (4)	---EXTRA CAPACITY---		CUSTOMER FACILITIES		CUSTOMER ACCOUNTING		-----FIRE SERVICE-----		
				MAX DAY (5)	MAX HOUR (6)	METERS (7)	SERVICES (8)	BILLING & COLLECTING (9)	METER READING (10)	PRIVATE FIRE (11)	PUBLIC FIRE (12)	RESIDENTIAL FIRE (13)
Utility Operating Income Available for Return	18	90,715,512	42,826,792	10,386,926	14,233,264	5,125,426	9,180,410	1,233,731	190,503	2,549,106	4,962,139	27,215
Total Cost of Service		272,252,054	127,826,368	28,711,499	30,845,306	19,935,073	21,517,052	19,907,522	3,199,796	7,849,531	12,404,183	55,724
Less: Other Water Revenues	19	1,198,016-	562,467-	126,391-	135,735-	87,695-	94,643-	87,575-	14,137-	34,503-	54,630-	240-
Revenues from Contract Sales	19	3,945,524-	1,852,424-	416,253-	447,028-	288,812-	311,696-	288,418-	46,557-	113,631-	179,916-	789-
Unrecovered Public Fire	20	7,253,648									7,253,648-	
Reallocate Unrecovered Public Fire	21	7,253,648				7,253,648						
Total Cost of Service Related to Sales of Water		267,108,514	125,411,477	28,168,855	30,262,543	26,812,214	21,110,713	19,531,529	3,139,102	7,701,397	4,915,989	54,695

PENNSYLVANIA SUBURBAN WATER COMPANY

FACTOR 18. ORIGINAL COST MEASURE OF VALUE RATE BASE ALLOCATED TO COST FUNCTIONS
ALLOCATED TO COST FUNCTIONS

ACCOUNT (1)	FACTOR REF (2)	COST OF SERVICE (3)	BASE (4)	---EXTRA CAPACITY---		CUSTOMER FACILITIES		CUSTOMER ACCOUNTING		-----FIRE SERVICE-----			
				MAX DAY (5)	MAX HOUR (6)	METERS (7)	SERVICES (8)	BILLING & COLLECTING (9)	METER READING (10)	PRIVATE FIRE (11)	PUBLIC FIRE (12)	RESIDENTIAL FIRE (13)	
DEPRECIABLE PLANT, CONT.													
311													
Electric Pumping Equipment													
Pumping Equipment	6	32,192,762	21,829,912	8,144,769	1,619,296						131,990	463,576	3,219
SCADA Equipment	6	851,946	577,705	215,542	42,853						3,493	12,268	85
320													
Purification System													
Structures	2	48,770,932	34,593,222	13,933,855							43,894	199,961	
Wells & Boosters	2	961,219	681,793	274,620							865	3,941	
Equipment	2	19,417,873	13,773,098	5,547,686							17,476	79,613	
Computers	2	1,480,432	1,050,071	422,959							1,332	6,070	
Painting	2	24,264	17,211	6,932							22	99	
Filter Media	2	624,730	443,122	178,485							562	2,561	
330													
Distr. Reservoirs & Standpipes													
Tanks	5	24,585,540	11,454,403		11,537,994						371,242	1,212,067	9,834
Tank Painting	5	3,009,697	1,402,218		1,412,451						45,446	148,378	1,204
331													
Mains and Accessories													
12 Inch and Over	3	171417,483	115,398,249	45,991,311							2,331,278	7,628,078	68,567
Under 12 Inch	4	320782,481	145,410,699		146437,203						6,736,432	22,005,678	192,469
333													
Services	9	107575,384					103681,155				3,894,229		
334													
Meters													
Conventional	8	982,505				803,198					179,307		
Remote	8	64,744,618				52,928,725					11,815,893		
335													
Fire Hydrants	7	24,361,710									1,851,490	22,510,220	
340													
Office Furniture and Equipment													
Furniture	15	1,117,861	380,632	129,001	60,588	107,874	49,186	275,217	42,814		34,430	38,007	112
Mechanical Equipment	15	321,488	109,466	37,100	17,425	31,024	14,145	79,150	12,313		9,902	10,931	32
Computers	15	12,460,894	4,242,936	1,437,987	675,380	1,202,476	548,279	3,067,872	477,252		383,796	423,670	1,246
341													
Transportation Equipment													
Vehicles	15	129,923	44,238	14,993	7,042	12,538	5,717	31,987	4,976		4,002	4,417	13
Other	15	496,037	168,900	57,243	26,885	47,868	21,826	122,124	18,998		15,278	16,865	50
342													
Stores Equipment	15	44,326	15,095	5,115	2,402	4,277	1,950	10,913	1,698		1,365	1,507	4
343.1													
Shop Equipment	15	315,776	107,522	36,441	17,115	30,472	13,894	77,744	12,094		9,726	10,736	32
343.2													
Tools & Work Equipment - General	15	4,509,750	1,535,571	520,425	244,428	435,191	198,429	1,110,300	172,723		138,900	153,332	451
344													
Laboratory Equipment													
Conventional	2	542,282	384,641	154,930							488	2,223	
Electronic	2	901,454	639,402	257,545							811	3,696	

Exhibit No. 6-R-3

PENNSYLVANIA SUBURBAN WATER COMPANY

FACTOR 18. ORIGINAL COST MEASURE OF VALUE RATE BASE ALLOCATED TO COST FUNCTIONS
 ALLOCATED TO COST FUNCTIONS

ACCOUNT (1)	FACTOR REF (2)	COST OF SERVICE (3)	BASE (4)	---EXTRA CAPACITY---		CUSTOMER FACILITIES		CUSTOMER ACCOUNTING		-----FIRE SERVICE-----				
				MAX DAY (5)	MAX HOUR (6)	METERS (7)	SERVICES (8)	BILLING & COLLECTING (9)	METER READING (10)	PRIVATE FIRE (11)	PUBLIC FIRE (12)	RESIDENTIAL FIRE (13)		
DEPRECIABLE PLANT, CONT.														
345		Tools & Work Equip.-Construction	15	2,843,501	968,212	328,140	154,118	274,398	125,114	700,070	108,906	87,580	96,679	284
346		Communication Equipment	15	1,515,956	516,183	174,941	82,165	146,290	66,702	373,228	58,061	46,691	51,543	152
347		Miscellaneous Equipment	15	178,062	60,630	20,548	9,651	17,183	7,835	43,839	6,820	5,484	6,054	18
413		New Acquisition Adj's.	17	1,449,089	680,346	167,370	230,550	81,874	148,387	16,520	2,608	41,009	79,990	435
		Total Depreciable Plant		1,014,147,610	472,306,337	116349,103	163594,646	57,926,510	105704,768	10,509,262	1,634,907	29,033,655	56,804,766	283,656
		Total Utility Plant		1,039,349,597	488,026,232	120069,101	165342,600	58,716,029	106472,599	11,817,117	1,838,504	29,376,054	57,405,013	286,348
OTHER RATE BASE ELEMENTS														
		Materials and Supplies	17	2,776,063	1,303,360	320,635	441,672	156,848	284,269	31,647	4,997	78,563	153,239	833
		Cash Working Capital - Expenses	15	9,462,500	3,221,980	1,091,973	512,868	913,131	416,350	2,329,668	362,414	291,445	321,725	946
		Cash Working Capital - Taxes	17	2,569,400	1,206,332	296,766	408,792	145,171	263,107	29,291	4,625	72,714	141,831	771
		Cash Working Capital - P/R Tax	16	337,000	133,147	45,158	21,164	38,216	17,086	47,686	9,672	11,627	13,210	34
		Cash Working Capital - Pfd Div	17											
		Unamortized PECO CTC Prepay Bal.	1	7,565,798	7,512,080							9,836	43,882	
		Mercer & Pulaski Acq. Adj. Bal.	17	164,448	77,208	18,994	26,164	9,291	16,839	1,875	296	4,654	9,078	49
		Northumberland & Excelcior Adj.	17	208,356	97,824	24,065	33,149	11,772	21,336	2,375	375	5,896	11,501	63
		Hubbard Contract Adjustment	2	646,232-	458,372-	184,628-						582-	2,650-	
		Service Line & Customer Deposits	17	23,033-	10,814-	2,660-	3,665-	1,301-	2,359-	263-	41-	652-	1,271-	7-
		Deferred Income Taxes	17	67,707,009-	31,788,440-	7,820,160-	10,772,185-	3,825,446-	6,933,198-	771,860-	121,873-	1,916,108-	3,737,427-	20,312-
		Accrued Interest	17	2,069,300-	971,537-	239,004-	329,226-	116,915-	211,896-	23,590-	3,725-	58,561-	114,225-	621-
		PennVest D.O.C.	17	454,580-	213,425-	52,504-	72,324-	25,684-	46,549-	5,182-	818-	12,865-	25,093-	136-
		Total Other Rate Base Elements		47,816,589-	19,890,657-	6,501,365-	9,733,591-	2,694,917-	6,175,015-	1,641,647	255,922	1,514,033-	3,186,200-	18,380-
		Total Original Cost Measure of Value		991,533,008	468,135,575	113567,736	155609,009	56,021,112	100297,584	13,458,764	2,094,426	27,862,021	54,218,813	267,968

BEFORE THE
PENNSYLVANIA PUBLIC UTILITY COMMISSION

DIRECT TESTIMONY OF
JOHN J. SPANOS

ON BEHALF OF
SUEZ WATER PENNSYLVANIA INC.

DEPRECIATION

DOCKET NO. R-2018-3000834

April 27, 2018

BEFORE THE PENNSYLVANIA PUBLIC UTILITY COMMISSION

RE: SUEZ WATER PENNSYLVANIA INC.

DIRECT TESTIMONY OF JOHN J. SPANOS

1 **Q. Please state your name and address.**

2 A. John J. Spanos. My business address is 207 Senate Avenue, Camp Hill,
3 Pennsylvania, 17011.

4 **Q. With what firm are you associated?**

5 A. I am associated with the firm of Gannett Fleming Valuation and Rate
6 Consultants, LLC (Gannett Fleming).

7 **Q. How long have you been associated with Gannett Fleming?**

8 A. I have been associated with the firm since college graduation in June 1986.

9 **Q. What is your position in the firm?**

10 A. I am Senior Vice President.

11 **Q. What is your educational background?**

12 A. I have Bachelor of Science degrees in Industrial Management and
13 Mathematics from Carnegie-Mellon University and a Master of Business
14 Administration from York College of Pennsylvania.

15 **Q. Are you a member of any professional societies?**

16 A. Yes. I am a member and past president of the Society of Depreciation
17 Professionals. I am also a member of the American Gas
18 Association/Edison Electric Institute Industry Accounting Committee.

19 **Q. Do you hold any special certification as a depreciation expert?**

1 A. Yes. The Society of Depreciation Professionals has established national
2 standards for depreciation professionals. The Society administers an
3 examination to become certified in the field. I passed the certification exam
4 in September 1997 and was recertified in August 2003, February 2008 and
5 January 2013.

6 **Q. What is the extent of your formal instruction with respect to utility
7 plant depreciation?**

8 A. I have completed the "Techniques of Life Analysis", "Techniques of Salvage
9 and Depreciation Analysis", "Forecasting Life and Salvage", "Modeling and
10 Life Analysis Using Simulation" and "Managing a Depreciation Study"
11 programs conducted by Depreciation Programs, Inc. Also, I have
12 completed the "Introduction to Public Water Accounting" program conducted
13 by the American Gas Association.

14 **Q. Please outline your experience in the field of depreciation.**

15 A. I have 32 years of depreciation experience which includes giving expert
16 testimony in over 280 cases before 40 regulatory commissions, including
17 this Commission. Please refer to Appendix A for my qualifications. In
18 addition to the cases that I have submitted testimony, I have supervised in
19 over 500 other depreciation or valuation projects.

20 **Q. What is the purpose of your testimony?**

21 A. I was asked by SUEZ Water Pennsylvania Inc. to prepare depreciation
22 studies with regards to plant in service as of December 31, 2017, as of
23 December 31, 2018 and as of December 31, 2019.

24 **Q. Have you prepared exhibits presenting the results of your studies?**

25 A. Yes. SWPA Exhibit No. JJS-1 presents the results of the depreciation study

1 as of December 31, 2017. SWPA Exhibit No. JJS-2 presents the results of
2 the depreciation study as of December 31, 2018. SWPA Exhibit No. JJS-3
3 presents the results of the depreciation study as of December 31, 2019. In
4 addition, I am responsible for the responses to the following filing
5 requirements pertaining to depreciation: D VI-1, D VI-2, D VI-3, D VI-4, D VI-
6 5 and D-VI-6, which present summaries of the study results. These are
7 found in the Appendix to SWPA Statement No. 7.

8 **Q. Please describe SWPA Exhibit Nos. JJS-1, JJS-2 and JJS-3.**

9 A. SWPA Exhibit No. JJS-1, titled "2017 Depreciation Study - Calculated
10 Annual Depreciation Accruals Related to Water Plant as of December 31,
11 2017," includes the results of the depreciation study as related to the
12 original cost at December 31, 2017. The report also includes the detailed
13 depreciation calculations. SWPA Exhibit No. JJS-2, titled "2015 Depreci-
14 ation Study - Calculated Annual Depreciation Accruals Related to Water
15 Plant as of December 31, 2018," includes the results of the depreciation
16 study as related to the estimated original cost at December 31, 2018. The
17 report also includes explanatory text, statistics related to the estimation of
18 service life, and the detailed depreciation calculations. SWPA Exhibit No.
19 JJS-3, titled "2019 Depreciation Study - Calculated Annual Depreciation
20 Accruals Related to Water Plant as of December 31, 2019" includes the
21 results of the depreciation study as related to the estimated original cost at
22 December 31, 2019. The report also includes the detailed depreciation
23 calculations.

24 **Q. What was the purpose of your depreciation studies?**

1 A. The purpose of the depreciation studies was to estimate the annual
2 depreciation accruals related to water plant in service for ratemaking
3 purposes and, using Commission-approved procedures, resulting from the
4 service life study that I conducted incorporating plant accounting data
5 through 2013 and water plant in service as of December 31, 2017,
6 December 31, 2018 and December 31, 2019.

7 **Q. What is SUEZ Water Pennsylvania's claim for annual depreciation**
8 **based on in this proceeding?**

9 A. For most plant accounts, the current claim for annual depreciation is based
10 on the straight line remaining life method of depreciation. For Accounts
11 340.1, 340.11, 340.2, 343.1, 343.2, 344, 346 and 347, the claim is based on
12 the straight line remaining life method of amortization. The annual
13 amortization is based on amortization accounting which distributes the
14 unrecovered cost of fixed capital assets over the remaining amortization
15 period selected for each account.

16 **Q. What group procedure is being used in this proceeding for depreciable**
17 **accounts?**

18 A. The equal life group procedure is used in this proceeding for all depreciable
19 accounts and installation years.

20 **Q. How was the book reserve used in the calculation of annual deprecia-**
21 **tion?**

22 A. The book reserve by account was allocated to vintages to determine original
23 cost less accrued depreciation by vintage. The total annual accrual is the

1 sum of the results of dividing the original costs less accrued depreciation by
2 the vintage composite remaining lives.

3 **Q. How was the book reserve as of December 31, 2018 and December 31,**
4 **2019 estimated?**

5 A. The book reserve as of December 31, 2018 and December 31, 2019, by
6 account, was projected by adding estimated accruals, salvage and the
7 amortization of net salvage, and subtracting estimated retirements and cost
8 of removal from the book reserve at December 31, 2017. Annual accruals
9 were calculated based on an average yearly or monthly plant balance. For
10 most accounts, salvage and cost of removal were estimated by (1)
11 expressing actual salvage and cost of removal as a percent of retirements
12 by account, for the most recent five-year period, and (2) applying those
13 percents to the projected retirement by account. For the purpose of
14 calculating the annual accruals, the projected book reserve by account was
15 allocated to vintages for the purpose of the annual accrual calculation based
16 on calculated accrued depreciation at December 31, 2018 and December
17 31, 2019.

18 **Q. Has a service life study of SUEZ Water Pennsylvania's water utility**
19 **property been performed?**

20 A. Yes. A service life study was performed through 2013. The service life
21 study is the basis for the service lives I used to calculate annual accruals.

22 **Q. Briefly outline the procedure used in performing the service life study.**

23 A. The service life study consisted of assembling and compiling historical data
24 from the records related to the water utility plant of SUEZ Water

1 Pennsylvania; statistically analyzing such data to obtain historical trends of
2 survivor characteristics; obtaining supplementary information from
3 management and operating personnel concerning Company practices and
4 plans as they relate to plant operations; and interpreting the above data to
5 form judgments of service life characteristics.

6 Iowa type survivor curves were used to describe the estimated survivor
7 characteristics of the mass property groups. Individual service lives were
8 used for major individual units of plant, such as intakes and buildings
9 housing treatment plants, pump stations, offices and shops. The life span
10 concept was recognized by coordinating the lives of associated plant
11 installed in subsequent years with the probable retirement date defined by
12 the life estimated for the major unit.

13 **Q. What statistical data were employed in the historical analyses**
14 **performed for the purpose of estimating service life characteristics?**

15 A. The data consisted of the entries made to record retirements and other
16 transactions related to the water plant during the period 1955-2013. These
17 entries were classified by depreciable group, type of transaction, the year in
18 which the transaction took place, and the year in which the plant was
19 installed. Types of transactions included in the data were plant additions,
20 retirements, transfers, and balances. In the presentation of service life
21 statistics, only the significant exposures points that were utilized in
22 determining survivor curves were plotted. This process is utilized to show
23 my judgment in service life determinations.

24 **Q. What was the source of these data?**

1 A. They were assembled from Company records related to its water plant in
2 service.

3 **Q. Were the methods used in the service life study the same as those**
4 **used in other depreciation studies for water utility plant presented**
5 **before this Commission?**

6 A. Yes. The methods are the same ones that have been presented previously
7 for other water companies before the Pennsylvania Public Utility
8 Commission and that have been accepted by the Commission in its past
9 orders concerning water utilities.

10 **Q. What approach did you use to estimate the lives of significant**
11 **structures such as office buildings and service centers?**

12 A. I used the life span technique to estimate the lives of significant structures.
13 In this technique, the survivor characteristics of the structures are described
14 by the use of interim survivor curves and estimated probable retirement
15 dates. The interim survivor curve describes the rate of retirement related to
16 the replacement of elements of the structure such as plumbing, heating,
17 doors, windows, roofs, etc. that occur during the life of the facility. The
18 probable retirement date provides the rate of final retirement for each year
19 of installation for the structure by truncating the interim survivor curve for
20 each installation year at its attained age at the date of probable retirement.
21 The use of interim survivor curves truncated at the date of probable
22 retirement provides a consistent method for estimating the lives of the
23 several years of installation inasmuch as concurrent retirement of all years
24 of installation will occur when the structure is retired.

1 **Q. Has your firm used this approach in other proceedings before this**
2 **Commission?**

3 A. Yes, we have used the life span technique on many occasions before the
4 Pennsylvania Public Utility Commission.

5 **Q. What are the bases for the probable retirement years that you have**
6 **estimated for each structure?**

7 A. The bases for the estimates of probable retirement years are life spans for
8 each structure that are based on judgment and incorporate consideration of
9 the age, use, size, nature of construction, management outlook and typical
10 life spans experienced and used by other water utilities for similar
11 structures. Most of the life spans result in probable retirement dates that
12 are many years in the future. As a result, the retirement of these structures
13 is not yet subject to specific management plans. Such plans would be
14 premature. At the appropriate time, studies of the economics of
15 rehabilitation and continued use or retirement of the structure will be
16 analyzed and the results incorporated in the estimation of the structure's life
17 span.

18 **Q. Are the factors considered in your estimates of service life presented**
19 **in SWPA Exhibit No. JJS-2?**

20 A. Yes. A discussion of the factors considered in the estimation of service
21 lives is presented by account on pages III-2 through III-5 of SWPA Exhibit
22 No. JJS-2.

23 **Q. Please outline the contents of SWPA Exhibit No. JJS-2.**

1 A. SWPA Exhibit No. JJS-2 is presented in eight parts. Part I, Introduction,
2 sets forth the scope and basis of the study. Part II, Estimation of Survivor
3 Curves, includes a description of the Iowa Curves and the formulation of the
4 retirement rate method. Part III, Service Life Considerations, and Part IV,
5 Calculation of Annual and Accrued Depreciation, include a description of the
6 judgment utilized for life parameters and the explanation of depreciation
7 procedures.

8 Part V, Results of Study, presents a description of the results and
9 summaries of the depreciation calculations. Part VI, Service Life Statistics
10 presents the graphs and tables which relate to the service life study. Part
11 VII, Detailed Depreciation Calculations, sets forth the detailed depreciation
12 calculations by account. Part VIII, Experienced and Estimated Net Salvage,
13 presents the cost of removal and gross salvage by account for the years
14 2014 through 2018.

15 Table 1, pages V-4 through V-6, presents the estimated survivor
16 curve, the original cost as of December 31, 2018, and the book reserve and
17 calculated annual depreciation for each account or subaccount of Water
18 Plant. Table 2, page V-7, presents the bringforward to December 31, 2018,
19 of the book depreciation reserve as of December 31, 2017. Table 3 on
20 page V-8 sets forth the calculation of the annual accruals used in the
21 bringforward. Table 4, page V-9, presents the experienced and estimated
22 net salvage during the five-year period, 2014 through 2018.

23 The section beginning on page VI-1 presents the results of the
24 retirement rate analyses prepared as the historical bases for the service life

1 estimates. The section beginning on page VII-1 presents the depreciation
2 calculations related to original cost. The tabulation on pages VII-3 through
3 VII-5 presents the cumulative depreciated original cost by year installed.
4 The tabulations on pages VII-7 through VII-59 present the calculation of
5 annual depreciation by vintage by account for each depreciable group of
6 water plant.

7 **Q. Please outline the contents of SWPA Exhibit No. JJS-3.**

8 A. SWPA Exhibit No. JJS-3 includes a description of the results, summaries of
9 the depreciation calculations, and the detailed depreciation calculations as
10 of December 31, 2019. The descriptions and explanations presented in
11 SWPA Exhibit No. JJS-2 are also applicable to the depreciation calculations
12 presented in SWPA Exhibit No. JJS-3. The graphs and tables related to
13 service life presented in SWPA Exhibit No. JJS-2 also support the service
14 life estimates used in SWPA Exhibit No. JJS-3 inasmuch as the estimates
15 are the same for both test years. The summary tables and detailed
16 depreciation calculations as of December 31, 2019, are organized and
17 presented in the same manner as those as of December 31, 2018.

18 **Q. Please outline the contents of SWPA Exhibit No. JJS-1.**

19 A. SWPA Exhibit No. JJS-1 includes a description of the results, summaries of
20 the depreciation calculations, and the detailed depreciation calculations as
21 of December 31, 2017. The descriptions and explanations presented in
22 SWPA Exhibit No. JJS-2 are also applicable to the depreciation calculations
23 presented in SWPA Exhibit No. JJS-1. The graphs and tables related to
24 service life presented in SWPA Exhibit No. JJS-2 also support the service

1 life estimates used in SWPA Exhibit No. JJS-1, inasmuch as the estimates
2 are the same for both test years. The summary tables and detailed
3 depreciation calculations as of December 31, 2017, are organized and
4 presented in the same manner as those as of December 31, 2018.

5 **Q. Please use an example to illustrate the manner in which the study is**
6 **presented in SWPA Exhibits Nos. JJS-1, JJS-2 and JJS-3.**

7 A. I will use Account 331, Transmission and Distribution Mains, as my
8 example, inasmuch as it is the largest depreciable group and represents 45
9 percent of the original cost of depreciable water plant as of December 31,
10 2018.

11 The retirement rate method was used to analyze the survivor
12 characteristics of this group. The life tables for the 1968-2013 and 1994-
13 2013 experience bands are presented on pages VI-67 through VI-74 of
14 SWPA Exhibit No. JJS-2. The life table, or original survivor curve, is plotted
15 along with the estimated smooth survivor curve, the 80-R3, on page VI-66.

16 The calculation of the annual depreciation related to the original cost
17 as of December 31, 2017 of water plant is presented on pages II-39 through
18 II-42 of SWPA Exhibit No. JJS-1. The calculation is based on the 80-R3
19 survivor curve, the attained age, and the allocated book reserve. The calcu-
20 lation as of December 31, 2018 is presented on pages VII-40 through VII-43
21 of SWPA Exhibit No. JJS-2 and is based in part on the bringforward of the
22 book reserve. Also, the calculation as of December 31, 2019 is presented
23 on pages II-40 through II-42 of SWPA Exhibit No. JJS-3 and is based in part
24 on the bringforward of the book reserve.

1 The tabulations in SWPA Exhibit Nos. JJS-1, JJS-2 and JJS-3 set forth
2 the installation year, the original cost, calculated accrued depreciation,
3 allocated book reserve, future accruals, remaining life and annual accrual.
4 The totals are brought forward to Table 1 on page I-4 in SWPA Exhibit No.
5 JJS-1, on page V-5 in SWPA Exhibit No. JJS-2 and on page I-4 in SWPA
6 Exhibit No. JJS-3.

7 **Q. In what manner is net salvage incorporated in the depreciation**
8 **calculations?**

9 **A. As stated on page I-4 of SWPA Exhibit No. JJS-2, no adjustment for net**
10 salvage was made to the calculated annual depreciation amounts. The total
11 calculated annual depreciation set forth on page I-5 of SWPA Exhibit No.
12 JJS-1, on page V-6 of SWPA Exhibit No. JJS-2 and page I-5 of SWPA
13 Exhibit No. JJS-3 reflects an addition for the amortization of negative net
14 salvage in accordance with the practice of this Commission. The
15 amortization is based on experience during the period 2013 through 2017
16 for the calculation as of December 31, 2017, and on experience during the
17 period 2014 through 2017, plus estimates for the twelve months of 2018 for
18 the calculation as of December 31, 2018. The amortization for the
19 December 31, 2019 calculation is based on experience during the period
20 2015 through 2017, plus estimates for the period January 2018 through
21 December 2019. The detail by plant account of regular retirements, salvage,
22 and cost of removal for each year is presented on pages III-2 through III-4 of
23 SWPA Exhibit No. JJS-1, pages VIII-2 through VIII-4 of SWPA Exhibit No.
24 JJS-2 and on pages III-2 through III-4 of SWPA Exhibit No. JJS-3. The

1 totals are brought forward to Table 2 on page I-6 of SWPA Exhibit No. JJS-
2 1, to Table 4 on page V-9 of SWPA Exhibit No. JJS-2 and to Table 4 on
3 page I-8 of SWPA Exhibit No. JJS-3 in which the amounts of the five-year
4 amortizations are calculated.

5 **Q. Does this complete your testimony at this time?**

6 **A. Yes, it does.**

Appendix A

JOHN SPANOS

DEPRECIATION EXPERIENCE

Q. Please state your name.

A. My name is John J. Spanos.

Q. What is your educational background?

A. I have Bachelor of Science degrees in Industrial Management and Mathematics from Carnegie-Mellon University and a Master of Business Administration from York College.

Q. Do you belong to any professional societies?

A. Yes. I am a member and past President of the Society of Depreciation Professionals and a member of the American Gas Association/Edison Electric Institute Industry Accounting Committee.

Q. Do you hold any special certification as a depreciation expert?

A. Yes. The Society of Depreciation Professionals has established national standards for depreciation professionals. The Society administers an examination to become certified in this field. I passed the certification exam in September 1997 and was recertified in August 2003, February 2008 and January 2013.

Q. Please outline your experience in the field of depreciation.

A. In June, 1986, I was employed by Gannett Fleming Valuation and Rate Consultants, Inc. as a Depreciation Analyst. During the period from June, 1986 through December, 1995, I helped prepare numerous depreciation and original cost studies for utility companies in various industries. I helped perform depreciation studies for the following telephone companies: United Telephone of Pennsylvania, United Telephone of New Jersey, and Anchorage Telephone Utility. I helped perform depreciation studies for the following

companies in the railroad industry: Union Pacific Railroad, Burlington Northern Railroad, and Wisconsin Central Transportation Corporation.

I helped perform depreciation studies for the following organizations in the electric utility industry: Chugach Electric Association, The Cincinnati Gas and Electric Company (CG&E), The Union Light, Heat and Power Company (ULH&P), Northwest Territories Power Corporation, and the City of Calgary - Electric System.

I helped perform depreciation studies for the following pipeline companies: TransCanada Pipelines Limited, Trans Mountain Pipe Line Company Ltd., Interprovincial Pipe Line Inc., Nova Gas Transmission Limited and Lakehead Pipeline Company.

I helped perform depreciation studies for the following gas utility companies: Columbia Gas of Pennsylvania, Columbia Gas of Maryland, The Peoples Natural Gas Company, T. W. Phillips Gas & Oil Company, CG&E, ULH&P, Lawrenceburg Gas Company and Penn Fuel Gas, Inc.

I helped perform depreciation studies for the following water utility companies: Indiana-American Water Company, Consumers Pennsylvania Water Company and The York Water Company; and depreciation and original cost studies for Philadelphia Suburban Water Company and Pennsylvania-American Water Company.

In each of the above studies, I assembled and analyzed historical and simulated data, performed field reviews, developed preliminary estimates of service life and net salvage, calculated annual depreciation, and prepared reports for submission to state public utility commissions or federal regulatory agencies. I performed these studies under the general direction of William M. Stout, P.E.

In January, 1996, I was assigned to the position of Supervisor of Depreciation

Studies. In July, 1999, I was promoted to the position of Manager, Depreciation and Valuation Studies. In December, 2000, I was promoted to the position as Vice-President of Gannett Fleming Valuation and Rate Consultants, Inc. and in April 2012, I was promoted to my present position as Senior Vice President of the Valuation and Rate Division of Gannett Fleming Inc. (now doing business as Gannett Fleming Valuation and Rate Consultants, LLC). In my current position I am responsible for conducting all depreciation, valuation and original cost studies, including the preparation of final exhibits and responses to data requests for submission to the appropriate regulatory bodies.

Since January 1996, I have conducted depreciation studies similar to those previously listed including assignments for Pennsylvania-American Water Company; Aqua Pennsylvania; Kentucky-American Water Company; Virginia-American Water Company; Indiana-American Water Company; Iowa-American Water Company; New Jersey-American Water Company; Hampton Water Works Company; Omaha Public Power District; Enbridge Pipe Line Company; Inc.; Columbia Gas of Virginia, Inc.; Virginia Natural Gas Company National Fuel Gas Distribution Corporation - New York and Pennsylvania Divisions; The City of Bethlehem - Bureau of Water; The City of Coatesville Authority; The City of Lancaster - Bureau of Water; Peoples Energy Corporation; The York Water Company; Public Service Company of Colorado; Enbridge Pipelines; Enbridge Gas Distribution, Inc.; Reliant Energy-HLP; Massachusetts-American Water Company; St. Louis County Water Company; Missouri-American Water Company; Chugach Electric Association; Alliant Energy; Oklahoma Gas & Electric Company; Nevada Power Company; Dominion Virginia Power; NUI-Virginia Gas Companies; Pacific Gas & Electric Company; PSI Energy; NUI - Elizabethtown Gas

Company; Cinergy Corporation – CG&E; Cinergy Corporation – ULH&P; Columbia Gas of Kentucky; South Carolina Electric & Gas Company; Idaho Power Company; El Paso Electric Company; Aqua North Carolina; Aqua Ohio; Aqua Texas, Inc.; Ameren Missouri; Central Hudson Gas & Electric; Centennial Pipeline Company; CenterPoint Energy-Arkansas; CenterPoint Energy – Oklahoma; CenterPoint Energy – Entex; CenterPoint Energy - Louisiana; NSTAR – Boston Edison Company; Westar Energy, Inc.; United Water Pennsylvania; PPL Electric Utilities; PPL Gas Utilities; Wisconsin Power & Light Company; TransAlaska Pipeline; Avista Corporation; Northwest Natural Gas; Allegheny Energy Supply, Inc.; Public Service Company of North Carolina; South Jersey Gas Company; Duquesne Light Company; MidAmerican Energy Company; Laclede Gas; Duke Energy Company; E.ON U.S. Services Inc.; Elkton Gas Services; Anchorage Water and Wastewater Utility; Kansas City Power and Light; Duke Energy North Carolina; Duke Energy South Carolina; Monongahela Power Company; Potomac Edison Company; Duke Energy Ohio Gas; Duke Energy Kentucky; Duke Energy Indiana; Duke Energy Progress; Northern Indiana Public Service Company; Tennessee-American Water Company; Columbia Gas of Maryland; Bonneville Power Administration; NSTAR Electric and Gas Company; EPCOR Distribution, Inc.; B. C. Gas Utility, Ltd; Entergy Arkansas; Entergy Texas; Entergy Mississippi; Entergy Louisiana; Entergy Gulf States Louisiana; the Borough of Hanover; Louisville Gas and Electric Company; Kentucky Utilities Company; Madison Gas and Electric; Central Maine Power; PEPCO; PacifiCorp; Minnesota Energy Resource Group; Jersey Central Power & Light Company; Cheyenne Light, Fuel and Power Company; United Water Arkansas; Central Vermont Public Service Corporation; Green Mountain Power; Portland General Electric Company; Atlantic City Electric; Nicor Gas Company; Black Hills

Power; Black Hills Colorado Gas; Black Hills Kansas Gas; Black Hills Service Company; Black Hills Utility Holdings; Public Service Company of Oklahoma; City of Dubois; Peoples Gas Light and Coke Company; North Shore Gas Company; Connecticut Light and Power; New York State Electric and Gas Corporation; Rochester Gas and Electric Corporation; Greater Missouri Operations; Tennessee Valley Authority; Omaha Public Power District; Indianapolis Power & Light Company; Vermont Gas Systems, Inc.; Metropolitan Edison; Pennsylvania Electric; West Penn Power; Pennsylvania Power; PHI Service Company - Delmarva Power and Light; Atmos Energy Corporation; Citizens Energy Group; PSE&G Company; Berkshire Gas Company; Alabama Gas Corporation; Mid-Atlantic Interstate Transmission, LLC; SUEZ Water; WEC Energy Group; Rocky Mountain Natural Gas, LLC; Illinois-American Water Company and Northern Illinois Gas Company.

My additional duties include determining final life and salvage estimates, conducting field reviews, presenting recommended depreciation rates to management for its consideration and supporting such rates before regulatory bodies.

Q. Have you submitted testimony to any state utility commission on the subject of utility plant depreciation?

A. Yes. I have submitted testimony to the Pennsylvania Public Utility Commission; the Commonwealth of Kentucky Public Service Commission; the Public Utilities Commission of Ohio; the Nevada Public Utility Commission; the Public Utilities Board of New Jersey; the Missouri Public Service Commission; the Massachusetts Department of Telecommunications and Energy; the Alberta Energy & Utility Board; the Idaho Public Utility Commission; the Louisiana Public Service Commission; the State Corporation Commission of Kansas; the Oklahoma Corporate Commission; the Public

Service Commission of South Carolina; Railroad Commission of Texas – Gas Services Division; the New York Public Service Commission; Illinois Commerce Commission; the Indiana Utility Regulatory Commission; the California Public Utilities Commission; the Federal Energy Regulatory Commission (“FERC”); the Arkansas Public Service Commission; the Public Utility Commission of Texas; Maryland Public Service Commission; Washington Utilities and Transportation Commission; The Tennessee Regulatory Commission; the Regulatory Commission of Alaska; Minnesota Public Utility Commission; Utah Public Service Commission; District of Columbia Public Service Commission; the Mississippi Public Service Commission; Delaware Public Service Commission; Virginia State Corporation Commission; Colorado Public Utility Commission; Oregon Public Utility Commission; South Dakota Public Utilities Commission; Wisconsin Public Service Commission; Wyoming Public Service Commission; Maine Public Utility Commission; Iowa Utility Board; Connecticut Public Utilities Regulatory Authority; New Mexico Public Regulation Commission; Commonwealth of Massachusetts Department of Public Utilities; Rhode Island Public Utilities Commission and the North Carolina Utilities Commission.

Q. Have you had any additional education relating to utility plant depreciation?

A. Yes. I have completed the following courses conducted by Depreciation Programs, Inc.: “Techniques of Life Analysis,” “Techniques of Salvage and Depreciation Analysis,” “Forecasting Life and Salvage,” “Modeling and Life Analysis Using Simulation,” and “Managing a Depreciation Study.” I have also completed the “Introduction to Public Utility Accounting” program conducted by the American Gas Association.

Q. Does this conclude your qualification statement?

A. Yes.

LIST OF CASES IN WHICH JOHN J. SPANOS SUBMITTED TESTIMONY

	<u>Year</u>	<u>Jurisdiction</u>	<u>Docket No.</u>	<u>Client Utility</u>	<u>Subject</u>
01.	1998	PA PUC	R-00984375	City of Bethlehem – Bureau of Water	Original Cost and Depreciation
02.	1998	PA PUC	R-00984567	City of Lancaster	Original Cost and Depreciation
03.	1999	PA PUC	R-00994605	The York Water Company	Depreciation
04.	2000	D.T.&E.	DTE 00-105	Massachusetts-American Water Company	Depreciation
05.	2001	PA PUC	R-00016114	City of Lancaster	Original Cost and Depreciation
06.	2001	PA PUC	R-00017236	The York Water Company	Depreciation
07.	2001	PA PUC	R-00016339	Pennsylvania-American Water Company	Depreciation
08.	2001	OH PUC	01-1228-GA-AIR	Cinergy Corp – Cincinnati Gas & Elect Co.	Depreciation
09.	2001	KY PSC	2001-092	Cinergy Corp – Union Light, Heat & Power Co.	Depreciation
10.	2002	PA PUC	R-00016750	Philadelphia Suburban Water Company	Depreciation
11.	2002	KY PSC	2002-00145	Columbia Gas of Kentucky	Depreciation
12.	2002	NJ BPU	GF02040245	NUI Corporation/Elizabethtown Gas Co.	Depreciation
13.	2002	ID PUC	IPC-E-03-7	Idaho Power Company	Depreciation
14.	2003	PA PUC	R-0027975	The York Water Company	Depreciation
15.	2003	IN URC	R-0027975	Cinergy Corp – PSI Energy, Inc.	Depreciation
16.	2003	PA PUC	R-00038304	Pennsylvania-American Water Co.	Depreciation
17.	2003	MO PSC	WR-2003-0500	Missouri-American Water Co.	Depreciation
18.	2003	FERC	ER-03-1274-000	NSTAR-Boston Edison Company	Depreciation
19.	2003	NJ BPU	BPU 03080683	South Jersey Gas Company	Depreciation
20.	2003	NV PUC	03-10001	Nevada Power Company	Depreciation
21.	2003	LA PSC	U-27676	CenterPoint Energy – Arkla	Depreciation
22.	2003	PA PUC	R-00038805	Pennsylvania Suburban Water Company	Depreciation
23.	2004	AB En/Util Bd	1306821	EPCOR Distribution, Inc.	Depreciation
24.	2004	PA PUC	R-00038168	National Fuel Gas Distribution Corp (PA)	Depreciation
25.	2004	PA PUC	R-00049255	PPL Electric Utilities	Depreciation
26.	2004	PA PUC	R-00049165	The York Water Company	Depreciation
27.	2004	OK Corp Cm	PUC 200400187	CenterPoint Energy – Arkla	Depreciation
28.	2004	OH PUC	04-680-EI-AIR	Cinergy Corp. – Cincinnati Gas and Electric Company	Depreciation
29.	2004	RR Com of TX	GUD#	CenterPoint Energy – Entex Gas Services Div.	Depreciation
30.	2004	NY PUC	04-G-1047	National Fuel Gas Distribution Gas (NY)	Depreciation
31.	2004	AR PSC	04-121-U	CenterPoint Energy – Arkla	Depreciation
32.	2005	IL CC	05-	North Shore Gas Company	Depreciation
33.	2005	IL CC	05-	Peoples Gas Light and Coke Company	Depreciation
34.	2005	KY PSC	2005-00042	Union Light Heat & Power	Depreciation

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	<u>Year</u>	<u>Jurisdiction</u>	<u>Docket No.</u>	<u>Client Utility</u>	<u>Subject</u>
35.	2005	IL CC	05-0308	MidAmerican Energy Company	Depreciation
36.	2005	MO PSC	GF-2005	Laclede Gas Company	Depreciation
37.	2005	KS CC	05-WSEE-981-RTS	Westar Energy	Depreciation
38.	2005	RR Com of TX	GUD #	CenterPoint Energy – Entex Gas Services Div.	Depreciation
39.	2005	FERC		Cinergy Corporation	Accounting
40.	2005	OK CC	PUD 200500151	Oklahoma Gas and Electric Co.	Depreciation
41.	2005	MA Dept Tele- com & Ergy	DTE 05-85	NSTAR	Depreciation
42.	2005	NY PUC	05-E-934/05-G-0935	Central Hudson Gas & Electric Co.	Depreciation
43.	2005	AK Reg Com	U-04-102	Chugach Electric Association	Depreciation
44.	2005	CA PUC	A05-12-002	Pacific Gas & Electric	Depreciation
45.	2006	PA PUC	R-00051030	Aqua Pennsylvania, Inc.	Depreciation
46.	2006	PA PUC	R-00051178	T.W. Phillips Gas and Oil Co.	Depreciation
47.	2006	NC Util Cm.		Pub. Service Co. of North Carolina	Depreciation
48.	2006	PA PUC	R-00051167	City of Lancaster	Depreciation
49.	2006	PA PUC	R00061346	Duquesne Light Company	Depreciation
50.	2006	PA PUC	R-00061322	The York Water Company	Depreciation
51.	2006	PA PUC	R-00051298	PPL GAS Utilities	Depreciation
52.	2006	PUC of TX	32093	CenterPoint Energy – Houston Electric	Depreciation
53.	2006	KY PSC	2006-00172	Duke Energy Kentucky	Depreciation
54.	2006	SC PSC		SCANA	
55.	2006	AK Reg Com	U-06-6	Municipal Light and Power	Depreciation
56.	2006	DE PSC	06-284	Delmarva Power and Light	Depreciation
57.	2006	IN URC	IURC43081	Indiana American Water Company	Depreciation
58.	2006	AK Reg Com	U-06-134	Chugach Electric Association	Depreciation
59.	2006	MO PSC	WR-2007-0216	Missouri American Water Company	Depreciation
60.	2006	FERC	ISO82, ETC. AL	TransAlaska Pipeline	Depreciation
61.	2006	PA PUC	R-00061493	National Fuel Gas Distribution Corp. (PA)	Depreciation
62.	2007	NC Util Com.	E-7 SUB 828	Duke Energy Carolinas, LLC	Depreciation
63.	2007	OH PSC	08-709-EL-AIR	Duke Energy Ohio Gas	Depreciation
64.	2007	PA PUC	R-00072155	PPL Electric Utilities Corporation	Depreciation
65.	2007	KY PSC	2007-00143	Kentucky American Water Company	Depreciation
66.	2007	PA PUC	R-00072229	Pennsylvania American Water Company	Depreciation
67.	2007	KY PSC	2007-0008	NiSource – Columbia Gas of Kentucky	Depreciation

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	<u>Year</u>	<u>Jurisdiction</u>	<u>Docket No.</u>	<u>Client Utility</u>	<u>Subject</u>
68.	2007	NY PSC	07-G-0141	National Fuel Gas Distribution Corp (NY)	Depreciation
69.	2008	AK PSC	U-08-004	Anchorage Water & Wastewater Utility	Depreciation
70.	2008	TN Reg Auth	08-00039	Tennessee-American Water Company	Depreciation
71.	2008	DE PSC	08-96	Artesian Water Company	Depreciation
72.	2008	PA PUC	R-2008-2023067	The York Water Company	Depreciation
73.	2008	KS CC	08-WSEE1-RTS	Westar Energy	Depreciation
74.	2008	IN URC	43526	Northern Indiana Public Service Co.	Depreciation
75.	2008	IN URC	43501	Duke Energy Indiana	Depreciation
76.	2008	MD PSC	9159	NiSource – Columbia Gas of Maryland	Depreciation
77.	2008	KY PSC	2008-000251	Kentucky Utilities	Depreciation
78.	2008	KY PSC	2008-000252	Louisville Gas & Electric	Depreciation
79.	2008	PA PUC	2008-20322689	Pennsylvania American Water Co.-Wastewater	Depreciation
80.	2008	NY PSC	08-E887/08-00888	Central Hudson	Depreciation
81.	2008	WV TC	VE-080416/VG-8080417	Avista Corporation	Depreciation
82.	2008	IL CC	ICC-09-166	Peoples Gas, Light and Coke Co.	Depreciation
83.	2009	IL CC	ICC-09-167	North Shore Gas Company	Depreciation
84.	2009	DC PSC	1076	Potomac Electric Power Company	Depreciation
85.	2009	KY PSC	2009-00141	NiSource – Columbia Gas of Kentucky	Depreciation
86.	2009	FERC	ER08-1056-002	Entergy Services	Depreciation
87.	2009	PA PUC	R-2009-2097323	Pennsylvania American Water Co.	Depreciation
88.	2009	NC Util Cm	E-7, Sub 090	Duke Energy Carolinas, LLC	Depreciation
89.	2009	KY PSC	2009-00202	Duke Energy Kentucky	Depreciation
90.	2009	VA St. CC	PUE-2009-00059	Aqua Virginia, Inc.	Depreciation
91.	2009	PA PUC	2009-2132019	Aqua Pennsylvania, Inc.	Depreciation
92.	2009	MS PSC	09-	Entergy Mississippi	Depreciation
93.	2009	AK PSC	09-08-U	Entergy Arkansas	Depreciation
94.	2009	TX PUC	37744	Entergy Texas	Depreciation
95.	2009	TX PUC	37690	El Paso Electric Company	Depreciation
96.	2009	PA PUC	R-2009-2106908	The Borough of Hanover	Depreciation
97.	2009	KS CC	10-KCPE-415-RTS	Kansas City Power & Light	Depreciation
98.	2009	PA PUC	R-2009-	United Water Pennsylvania	Depreciation
99.	2009	OH PUC		Aqua Ohio Water Company	Depreciation
100.	2009	WI PSC	3270-DU-103	Madison Gas & Electric Co.	Depreciation
101.	2009	MO PSC	WR-2010	Missouri American Water Co.	Depreciation
102.	2009	AK Reg Cm	U-09-097	Chugach Electric Association	Depreciation

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	<u>Year</u>	<u>Jurisdiction</u>	<u>Docket No.</u>	<u>Client Utility</u>	<u>Subject</u>
103.	2010	IN URC	43969	Northern Indiana Public Service Co.	Depreciation
104.	2010	WI PSC	6690-DU-104	Wisconsin Public Service Corp.	Depreciation
105.	2010	PA PUC	R-2010-2161694	PPL Electric Utilities Corp.	Depreciation
106.	2010	KY PSC	2010-00036	Kentucky American Water Company	Depreciation
107.	2010	PA PUC	R-2009-2149262	Columbia Gas of Pennsylvania	Depreciation
108.	2010	MO PSC	GR-2010-0171	Laclede Gas Company	Depreciation
109.	2010	SC PSC	2009-489-E	South Carolina Electric & Gas Co.	Depreciation
110.	2010	NJ BD OF PU	ER09080664	Atlantic City Electric	Depreciation
111.	2010	VA St. CC	PUE-2010-00001	Virginia American Water Company	Depreciation
112.	2010	PA PUC	R-2010-2157140	The York Water Company	Depreciation
113.	2010	MO PSC	ER-2010-0356	Greater Missouri Operations Co.	Depreciation
114.	2010	MO PSC	ER-2010-0355	Kansas City Power and Light	Depreciation
115.	2010	PA PUC	R-2010-2167797	T.W. Phillips Gas and Oil Co.	Depreciation
116.	2010	PSC SC	2009-489-E	SCANA – Electric	Depreciation
117.	2010	PA PUC	R-2010-22010702	Peoples Natural Gas, LLC	Depreciation
118.	2010	AK PSC	10-067-U	Oklahoma Gas and Electric Co.	Depreciation
119.	2010	IN URC		Northern Indiana Public Serv. Co. - NIFL	Depreciation
120.	2010	IN URC		Northern Indiana Public Serv. Co. - Kokomo	Depreciation
121.	2010	PA PUC	R-2010-2166212	Pennsylvania American Water Co - WW	Depreciation
122.	2010	NC Util Cn.	W-218,SUB310	Aqua North Carolina, Inc.	Depreciation
123.	2011	OH PUC	11-4161-WS-AIR	Ohio American Water Company	Depreciation
124.	2011	MS PSC	EC-123-0082-00	Entergy Mississippi	Depreciation
125.	2011	CO PUC	11AL-387E	Black Hills Colorado	Depreciation
126.	2011	PA PUC	R-2010-2215623	Columbia Gas of Pennsylvania	Depreciation
127.	2011	PA PUC	R-2010-2179103	Lancaster, City of – Bureau of Water	Depreciation
128.	2011	IN URC	43114 IGCC 4S	Duke Energy Indiana	Depreciation
129.	2011	FERC	IS11-146-000	Enbridge Pipelines (Southern Lights)	Depreciation
130.	2011	IL CC	11-0217	MidAmerican Energy Corporation	Depreciation
131.	2011	OK CC	201100087	Oklahoma Gas & Electric Co.	Depreciation
132.	2011	PA PUC	2011-2232243	Pennsylvania American Water Company	Depreciation
133.	2011	FERC	2011-2232243	Carolina Gas Transmission	Depreciation
134.	2012	WA UTC	UE-120436/UG-120437	Avista Corporation	Depreciation
135.	2012	AK Reg Cm	U-12-009	Chugach Electric Association	Depreciation
136.	2012	MA PUC	DPU 12-25	Columbia Gas of Massachusetts	Depreciation
137.	2012	TX PUC	40094	El Paso Electric Company	Depreciation

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138.	2012	ID PUC	IPC-E-12	Idaho Power Company	Depreciation
139.	2012	PA PUC	R-2012-2290597	PPL Electric Utilities	Depreciation
140.	2012	PA PUC	R-2012-2311725	Hanover, Borough of – Bureau of Water	Depreciation
141.	2012	KY PSC	2012-00222	Louisville Gas and Electric Company	Depreciation
142.	2012	KY PSC	2012-00221	Kentucky Utilities Company	Depreciation
143.	2012	PA PUC	R-2012-2285985	Peoples Natural Gas Company	Depreciation
144.	2012	DC PSC	Case 1087	Potomac Electric Power Company	Depreciation
145.	2012	OH PSC	12-1682-EL-AIR	Duke Energy Ohio (Electric)	Depreciation
146.	2012	OH PSC	12-1685-GA-AIR	Duke Energy Ohio (Gas)	Depreciation
147.	2012	PA PUC	R-2012-2310366	Lancaster, City of – Sewer Fund	Depreciation
148.	2012	PA PUC	R-2012-2321748	Columbia Gas of Pennsylvania	Depreciation
149.	2012	FERC	ER-12-2681-000	ITC Holdings	Depreciation
150.	2012	MO PSC	ER-2012-0174	Kansas City Power and Light	Depreciation
151.	2012	MO PSC	ER-2012-0175	KCPL Greater Missouri Operations Co.	Depreciation
152.	2012	MO PSC	GO-2012-0363	Laclede Gas Company	Depreciation
153.	2012	MN PUC	G007,001/D-12-533	Integrays – MN Energy Resource Group	Depreciation
153.	2012	TX PUC		Aqua Texas	Depreciation
155.	2012	PA PUC	2012-2336379	York Water Company	Depreciation
156.	2013	NJ BPU	ER12121071	PHI Service Co.– Atlantic City Electric	Depreciation
157.	2013	KY PSC	2013-00167	Columbia Gas of Kentucky	Depreciation
158.	2013	VA St CC	2013-00020	Virginia Electric and Power Co.	Depreciation
159.	2013	IA Util Bd	2013-0004	MidAmerican Energy Corporation	Depreciation
160.	2013	PA PUC	2013-2355276	Pennsylvania American Water Co.	Depreciation
161.	2013	NY PSC	13-E-0030, 13-G-0031, 13-S-0032	Consolidated Edison of New York	Depreciation
162.	2013	PA PUC	2013-2355886	Peoples TWP LLC	Depreciation
163.	2013	TN Reg Auth	12-0504	Tennessee American Water	Depreciation
164.	2013	ME PUC	2013-168	Central Maine Power Company	Depreciation
165.	2013	DC PSC	Case 1103	PHI Service Co. – PEPCO	Depreciation
166.	2013	WY PSC	2003-ER-13	Cheyenne Light, Fuel and Power Co.	Depreciation
167.	2013	FERC	ER13- -0000	Kentucky Utilities	Depreciation
168.	2013	FERC	ER13- -0000	MidAmerican Energy Company	Depreciation
169.	2013	FERC	ER13- -0000	PPL Utilities	Depreciation
170.	2013	PA PUC	R-2013-2372129	Duquesne Light Company	Depreciation
171.	2013	NJ BPU	ER12111052	Jersey Central Power and Light Co.	Depreciation

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	<u>Year</u>	<u>Jurisdiction</u>	<u>Docket No.</u>	<u>Client Utility</u>	<u>Subject</u>
172.	2013	PA PUC	R-2013-2390244	Bethlehem, City of – Bureau of Water	Depreciation
173.	2013	OK CC	UM 1679	Oklahoma, Public Service Company of	Depreciation
174.	2013	IL CC	13-0500	Nicor Gas Company	Depreciation
175.	2013	WY PSC	20000-427-EA-13	PacifiCorp	Depreciation
176.	2013	UT PSC	13-035-02	PacifiCorp	Depreciation
177.	2013	OR PUC	UM 1647	PacifiCorp	Depreciation
178.	2013	PA PUC	2013-2350509	Dubois, City of	Depreciation
179.	2014	IL CC	14-0224	North Shore Gas Company	Depreciation
180.	2014	FERC	ER14-	Duquesne Light Company	Depreciation
181.	2014	SD PUC	EL14-026	Black Hills Power Company	Depreciation
182.	2014	WY PSC	20002-91-ER-14	Black Hills Power Company	Depreciation
183.	2014	PA PUC	2014-2428304	Hanover, Borough of – Municipal Water Works	Depreciation
184.	2014	PA PUC	2014-2406274	Columbia Gas of Pennsylvania	Depreciation
185.	2014	IL CC	14-0225	Peoples Gas Light and Coke Company	Depreciation
186.	2014	MO PSC	ER-2014-0258	Ameren Missouri	Depreciation
187.	2014	KS CC	14-BHCG-502-RTS	Black Hills Service Company	Depreciation
188.	2014	KS CC	14-BHCG-502-RTS	Black Hills Utility Holdings	Depreciation
189.	2014	KS CC	14-BHCG-502-RTS	Black Hills Kansas Gas	Depreciation
190.	2014	PA PUC	2014-2418872	Lancaster, City of – Bureau of Water	Depreciation
191.	2014	WV PSC	14-0701-E-D	First Energy – MonPower/PotomacEdison	Depreciation
192.	2014	VA St CC	PUC-2014-00045	Aqua Virginia	Depreciation
193.	2014	VA St CC	PUE-2013	Virginia American	Depreciation
194.	2014	OK CC	PUD201400229	Oklahoma Gas and Electric	Depreciation
195.	2014	OR PUC	UM1679	Portland General Electric	Depreciation
196.	2014	IN URC	Cause No. 44576	Indianapolis Power & Light	Depreciation
197.	2014	MA DPU	DPU. 14-150	NSTAR Gas	Depreciation
198.	2014	CT PURA	14-05-06	Connecticut Light and Power	Depreciation
199.	2014	MO PSC	ER-2014-0370	Kansas City Power & Light	Depreciation
200.	2014	KY PSC	2014-00371	Kentucky Utilities Company	Depreciation
201.	2014	KY PSC	2014-00372	Louisville Gas and Electric Company	Depreciation
202.	2015	PA PUC	R-2015-2462723	United Water Pennsylvania Inc.	Depreciation
203.	2015	PA PUC	R-2015-2468056	Columbia Gas of Pennsylvania	Depreciation
204.	2015	NY PSC	15-E-0283/15-G-0284	New York State Electric and Gas Corporation	Depreciation
205.	2015	NY PSC	15-E-0285/15-G-0286	Rochester Gas and Electric Corporation	Depreciation
206.	2015	MO PSC	WR-2015-0301/SR-2015-0302	Missouri American Water Company	Depreciation

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	<u>Year</u>	<u>Jurisdiction</u>	<u>Docket No.</u>	<u>Client Utility</u>	<u>Subject</u>
207.	2015	OK CC	PUD 201500208	Oklahoma, Public Service Company of	Depreciation
208.	2015	WV PSC	15-0676-W-42T	West Virginia American Water Company	Depreciation
209.	2015	PA PUC	2015-2469275	PPL Electric Utilities	Depreciation
210.	2015	IN URC	Cause No. 44688	Northern Indiana Public Service Company	Depreciation
211.	2015	OH PSC	14-1929-EL-RDR	First Energy-Ohio Edison/Cleveland Electric/ Toledo Edison	Depreciation
212.	2015	NM PRC	15-00127-UT	El Paso Electric	Depreciation
213.	2015	TX PUC	PUC-44941; SOAH 473-15-5257	El Paso Electric	Depreciation
214.	2015	WI PSC	3270-DU-104	Madison Gas and Electric Company	Depreciation
215.	2015	OK CC	PUD 201500273	Oklahoma Gas and Electric	Depreciation
216.	2015	KY PSC	Doc. No. 2015-00418	Kentucky American Water Company	Depreciation
217.	2015	NC UC	Doc. No. G-5, Sub 565	Public Service Company of North Carolina	Depreciation
218.	2016	WA UTC	Docket UE-17	Puget Sound Energy	Depreciation
219.	2016	NY PSC	Case No. 16-W-0130	Suez Water New York, Inc.	Depreciation
220.	2016	MO PSC	ER-2016-0156	KCPL – Greater Missouri	Depreciation
221.	2016	WI PSC		Wisconsin Public Service Commission	Depreciation
222.	2016	KY PSC	Case No. 2016-00026	Kentucky Utilities Company	Depreciation
223.	2016	KY PSC	Case No. 2016-00027	Louisville Gas and Electric Company	Depreciation
224.	2016	OH PUC	Case No. 16-0907-WW-AIR	Aqua Ohio	Depreciation
225.	2016	MD PSC	Case 9417	Columbia Gas of Maryland	Depreciation
226.	2016	KY PSC	2016-00162	Columbia Gas of Kentucky	Depreciation
227.	2016	DE PSC	16-0649	Delmarva Power and Light Co. – Electric	Depreciation
228.	2016	DE PSC	16-0650	Delmarva Power and Light Co. – Gas	Depreciation
229.	2016	NY PSC	Case 16-G-0257	National Fuel Gas Distribution Corp – NY Div	Depreciation
230.	2016	PA PUC	R-2016-2537349	Metropolitan Edison Company	Depreciation
231.	2016	PA PUC	R-2016-2537352	Pennsylvania Electric Company	Depreciation
232.	2016	PA PUC	R-2016-2537355	Pennsylvania Power Company	Depreciation
233.	2016	PA PUC	R-2016-2537359	West Penn Power Company	Depreciation
234.	2016	PA PUC	R-2016-2529660	Columbia Gas of PA	Depreciation
235.	2016	KY PSC	Case No. 2016-00063	Kentucky Utilities / Louisville Gas & Electric Co	Depreciation
236.	2016	MO PSC	ER-2016-0285	KCPL Missouri	Depreciation
237.	2016	AR PSC	16-052-U	Oklahoma Gas & Electric Co	Depreciation
238.	2016	PSCW	6680-DU-104	Wisconsin Power and Light	Depreciation
239.	2016	ID PUC	IPC-E-16-23	Idaho Power Company	Depreciation
240.	2016	OR PUC	UM1801	Idaho Power Company	Depreciation

LIST OF CASES IN WHICH JOHN J. SPANOS SUBMITTED TESTIMONY

	<u>Year</u>	<u>Jurisdiction</u>	<u>Docket No.</u>	<u>Client Utility</u>	<u>Subject</u>
241.	2016	ILL CC	16-	MidAmerican Energy Company	Depreciation
242.	2016	KY PSC	Case No. 2016-00370	Kentucky Utilities Company	Depreciation
243.	2016	KY PSC	Case No. 2016-00371	Louisville Gas and Electric Company	Depreciation
244.	2016	IN URC		Indianapolis Power & Light	Depreciation
245.	2016	AL RC	U-16-081	Chugach Electric Association	Depreciation
246.	2017	MA DPU	D.P.U. 17-05	NSTAR Electric Company and Western Massachusetts Electric Company	Depreciation
247.	2017	TX PUC	PUC-26831, SOAH 973-17-2686	El Paso Electric Company	Depreciation
248.	2017	WA UT&C	UE-17033 and UG-170034	Puget Sound Energy	Depreciation
249.	2017	OH PUC	Case No. 17-0032-EL-AIR	Duke Energy Ohio	Depreciation
250.	2017	VA SCC	Case No. PUE-2016-00413	Virginia Natural Gas, Inc.	Depreciation
251.	2017	OK CC	Case No. PUD201700151	Oklahoma, Public Service Company of	Depreciation
252.	2017	MD PSC	Case No. 9447	Columbia Gas of Maryland	Depreciation
253.	2017	NC UC	Docket No. E-2, Sub 1142	Duke Energy Progress	Depreciation
254.	2017	VA SCC	Case No. PUR-2017-00090	Dominion Virginia Electric and Power Company	Depreciation
255.	2017	FERC	ER17-1162	MidAmerican Energy Company	Depreciation
256.	2017	PA PUC	R-2017-2595853	Pennsylvania American Water Company	Depreciation
257.	2017	OR PUC	UM1809	Portland General Electric	Depreciation
258.	2017	FERC	ER17-217	Jersey Central Power & Light	Depreciation
259.	2017	FERC	ER17-211	Mid-Atlantic Interstate Transmission, LLC	Depreciation
260.	2017	MN PUC	Docket No. G007/D-17-442	Minnesota Energy Resources Corporation	Depreciation
261.	2017	IL CC	Docket No. 17-0124	Northern Illinois Gas Company	Depreciation
262.	2017	OR PUC	UM1808	Northwest Natural Gas Company	Depreciation
263.	2017	NY PSC	Case No. 17-W-0528	SUEZ Water Owego-Nichols	Depreciation
264.	2017	MO PSC	GR-2017-0215	Laclede Gas Company	Depreciation
265.	2017	MO PSC	GR-2017-0216	Missouri Gas Energy	Depreciation
266.	2017	ILL CC	Docket No. 17-0337	Illinois-American Water Company	Depreciation
267.	2017	FERC	Docket No. ER17-_____	PPL Electric Utilities Corporation	Depreciation
268.	2017	IN URC	Cause No. 44988	Northern Indiana Public Service Company	Depreciation
269.	2017	NJ BPU	BPU Docket No. WR17090985	New Jersey American Water Company, Inc.	Depreciation
270.	2017	RI PUC	Docket No. 4800	SUEZ Water Rhode Island	Depreciation
271.	2017	OK CC	Cause No. PUD 201700496	Oklahoma Gas and Electric Company	Depreciation
272.	2017	NJ BPU	ER18010029 & GR18010030	Public Service Electric and Gas Company	Depreciation
273.	2017	NC Util Com.	Docket No. E-7, SUB 1146	Duke Energy Carolinas, LLC	Depreciation
274.	2017	KY PSC	Case No. 2017-00321	Duke Energy Kentucky, Inc.	Depreciation

LIST OF CASES IN WHICH JOHN J. SPANOS SUBMITTED TESTIMONY

	<u>Year</u>	<u>Jurisdiction</u>	<u>Docket No.</u>	<u>Client Utility</u>	<u>Subject</u>
275.	2018	IN IURC	Cause No. 44992	Indiana-American Water Company, Inc.	Depreciation
276.	2018	IN IURC	Cause No. 45029	Indianapolis Power and Light	Depreciation
277.	2018	NC Util Com.		Aqua North Carolina, Inc.	Depreciation
278.	2018	PA PUC	Docket No. R-2018-2647577	Columbia Gas of Pennsylvania, Inc.	Depreciation
279.	2018	OR PUC	Docket UM 1933	Avista Corporation	Depreciation
280.	2018	IN URC	Cause No. 45039	Citizens Energy Group	Depreciation
281.	2018	FERC	Docket No. ER18-	Duke Energy Progress	Depreciation
282.	2018	PA PUC	Docket No. R-2018-	Duquesne Light Company	Depreciation
283.	2018	MD PSC	Case No.	Columbia Gas of Maryland	Depreciation
284.	2018	MA DPU	D.P.U. 18-45	Columbia Gas of Massachusetts	Depreciation
285.	2018	OH PUC	Case No. 18-0299-GA-ALT	Vectren Energy Delivery of Ohio	Depreciation



2017 DEPRECIATION STUDY

**CALCULATED ANNUAL DEPRECIATION
ACCRUALS RELATED TO WATER PLANT
AS OF DECEMBER 31, 2017**

Prepared by:



Excellence Delivered As Promised

SUEZ WATER PENNSYLVANIA INC.
Harrisburg, Pennsylvania

2017 DEPRECIATION STUDY

CALCULATED ANNUAL DEPRECIATION ACCRUALS
RELATED TO WATER PLANT
AS OF DECEMBER 31, 2017

GANNETT FLEMING VALUATION AND RATE CONSULTANTS, LLC
Camp Hill, Pennsylvania



Excellence Delivered As Promised

April 20, 2018

SUEZ Water Pennsylvania Inc.
4211 E. Park Circle
Harrisburg, PA 17111

Attention Mr. John D. Hollenbach
Vice President, Mid Atlantic Division

Ladies and Gentlemen:

Pursuant to your request, we have determined the annual depreciation accruals applicable to water plant as of December 31, 2017. Summaries of the original cost, annual accruals and the book depreciation reserve are presented in Tables 1 and 2, beginning on page I-3 of the attached report.

A description of the methods and procedures upon which the study was based is set forth in a companion report, "2018 Depreciation Study - Calculated Annual Depreciation Accruals Related to Water Plant as of December 31, 2018".

Respectfully submitted,

GANNETT FLEMING VALUATION
AND RATE CONSULTANTS, LLC

A handwritten signature in black ink that reads "John J. Spanos".

JOHN J. SPANOS
Sr. Vice President

JJS:mle

063817.100

Gannett Fleming Valuation and Rate Consultants, LLC

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PART I. RESULTS OF STUDY

**SUEZ WATER PENNSYLVANIA INC.
DEPRECIATION STUDY**

PART I. RESULTS OF STUDY

DESCRIPTION OF SUMMARY TABULATIONS

The results of the depreciation study are summarized in Table 1, which sets forth the calculated annual depreciation related to Water Plant in Service as of December 31, 2017. Table 2 presents the experienced salvage and cost of removal associated with regular retirements during the five-year period, 2013-2017 and the annual amortization of net salvage.

DETAILED TABULATIONS OF DEPRECIATION CALCULATIONS

The supporting data for the depreciation calculations are presented in account sequence in the section beginning on II-7. The original cost, calculated accrued depreciation, allocated book reserve, future accruals, remaining life and annual accrual are shown for each vintage of each account or subaccount. The amounts of regular retirements, gross salvage and cost of removal are set forth by account for the years 2013 through 2017, beginning on beginning on III-2 through III-4.



SUEZ WATER PENNSYLVANIA, INC.

TABLE 1. SUMMARY OF ESTIMATED SURVIVOR CURVES, ORIGINAL COST, BOOK RESERVE AND CALCULATED ANNUAL DEPRECIATION ACCRUALS RELATED TO WATER PLANT AS OF DECEMBER 31, 2017

DEPRECIABLE GROUP (1)	SURVIVOR CURVE (2)	ORIGINAL COST (3)	BOOK RESERVE (4)	FUTURE ACCRUALS (5)	ANNUAL		COMPOSITE REMAINING LIFE (8)	
					ACCRUAL AMOUNT (6)	ACCRUAL RATE (7)=(6)/(3)		
INTANGIBLE PLANT								
301.00	ORGANIZATION	66,399.00	145,805					
302.00	FRANCHISES AND CONSENTS	64,265.56						
303.00	MISCELLANEOUS INTANGIBLE PLANT	4,366,092.40	(137,089)					
	TOTAL INTANGIBLE PLANT	4,496,756.96	8,716					
DEPRECIABLE PLANT								
STRUCTURES AND IMPROVEMENTS								
304.20	PUMPING	55-R2	3,721,078.15	868,598	2,852,480	86,880	2.33	32.8
304.30	WATER TREATMENT PLANT							
	BLOOMSBURG TREATMENT PLANT	55-S1.5 *	181,380.86	106,258	75,123	8,826	4.87	8.5
	BLOOMSBURG TREATMENT PLANT - NEW	55-S1.5 *	5,829,778.36	176,577	5,653,201	135,276	2.32	41.8
	SIXTH STREET PLANT	55-S1.5 *	4,160,026.78	1,471,835	2,688,192	116,250	2.79	23.1
	RICHARD C. RABOLD	55-S1.5 *	1,619,181.24	770,298	848,883	41,991	2.59	20.2
	MARKET STREET	55-S1.5 *	101,359.72	75,061	26,299	4,398	4.34	6.0
	OLD HUMMELSTOWN PLANT	55-S1.5 *	86,583.70	86,584	0	0	-	-
	HUMMELSTOWN MEMBRANE PLANT	55-S1.5 *	4,410,545.60	1,012,413	3,398,133	106,235	2.41	32.0
	OTHER TREATMENT FACILITIES	50-R3	3,087,574.48	418,524	2,669,050	71,389	2.31	37.4
	TOTAL WATER TREATMENT PLANT		19,476,430.74	4,117,550	15,358,881	484,365	2.49	31.7
304.40	TRANSMISSION AND DISTRIBUTION	40-R3	282,963.06	8,147	274,816	8,486	3.00	32.4
304.51	OFFICES							
	BLOOMSBURG TREATMENT PLANT	55-S1.5 *	8,862,454.27	278,341	8,584,113	205,411	2.32	41.8
	OTHER OFFICES	45-R2.5	903,388.38	214,778	688,610	24,480	2.71	28.1
	TOTAL OFFICES		9,765,842.65	493,119	9,272,723	229,891	2.35	40.3
304.52	STORES, SHOP AND GARAGE							
	SUMMIT VIEW MAINTENANCE BUILDING	60-S0.5 *	1,381,513.01	501,857	879,656	40,481	2.93	21.7
	OTHER MAINTENANCE BUILDINGS	35-S2.5	189,085.13	110,653	78,432	6,315	3.34	12.4
	TOTAL ACCOUNT STORES, SHOP AND GARAGE		1,570,598.14	612,510	958,088	46,796	2.98	20.5
304.53	MISCELLANEOUS	25-S2	352,038.57	173,962	178,077	16,060	4.56	11.1
	TOTAL STRUCTURES AND IMPROVEMENTS		35,168,951.31	6,273,886	28,895,065	872,478	2.48	33.1
305.00	COLLECTING AND IMPOUNDING RESERVOIRS	65-S1	434,632.39	99,179	335,453	8,504	1.96	39.4
306.00	LAKE, RIVER AND OTHER INTAKES							
	ROCKVILLE INTAKE	65-R2.5 *	1,519,927.27	692,727	827,200	33,372	2.20	24.8
	HUMMELSTOWN INTAKE	65-R2.5 *	1,335,191.80	301,452	1,033,740	28,446	2.13	36.3
	OTHER INTAKES	50-S1	509,724.53	70,671	439,054	12,597	2.47	34.9
	TOTAL LAKE, RIVER AND OTHER INTAKES		3,364,843.60	1,064,850	2,299,994	74,415	2.21	30.9



SUEZ WATER PENNSYLVANIA, INC.

TABLE 1. SUMMARY OF ESTIMATED SURVIVOR CURVES, ORIGINAL COST, BOOK RESERVE AND CALCULATED ANNUAL DEPRECIATION ACCRUALS RELATED TO WATER PLANT AS OF DECEMBER 31, 2017

	DEPRECIABLE GROUP (1)	SURVIVOR CURVE (2)	ORIGINAL COST (3)	BOOK RESERVE (4)	FUTURE ACCRUALS (5)	ANNUAL		COMPOSITE REMAINING LIFE (8)
						ACCRUAL AMOUNT (6)	ACCRUAL RATE (7)=(6)/(3)	
307.00	WELLS AND SPRINGS	48-R2	1,028,041.81	500,275	527,767	18,641	1.81	28.3
308.00	INFILTRATION GALLERIES AND TUNNELS	40-R2.5	13,358.04	2,022	11,336	425	3.18	26.7
	PUMPING EQUIPMENT							
311.20	ELECTRIC PUMPING EQUIPMENT	36-R0.5	14,091,239.53	4,499,502	9,591,738	526,952	3.74	18.2
311.30	OIL ENGINE PUMPING EQUIPMENT	35-R2	314,155.59	246,715	67,441	4,106	1.31	16.4
	TOTAL PUMPING EQUIPMENT		14,405,395.12	4,746,217	9,659,179	531,058	3.69	18.2
	WATER TREATMENT PLANT							
320.10	STRUCTURES AND IMPROVEMENTS							
	BLOOMSBURG TREATMENT PLANT	50-R1.5	338,354.21	319,512	18,842	1,933	0.57	9.7
	BLOOMSBURG TREATMENT PLANT - NEW	50-R1.5	13,501,911.63	846,036	12,655,876	422,567	3.13	29.9
	SIXTH STREET PLANT	50-R1.5	10,498,953.33	5,768,860	4,730,093	214,930	2.05	22.0
	RICHARD C. RABOLD	50-R1.5	1,756,585.15	1,190,197	566,388	28,199	1.61	20.1
	MARKET STREET	50-R1.5	192,621.85	154,540	38,082	6,025	3.13	6.3
	OLD HUMMELSTOWN PLANT	50-R1.5	858,433.64	858,434	0	0	-	-
	HUMMELSTOWN MEMBRANE PLANT	50-R1.5	9,469,382.38	3,555,598	5,913,784	203,723	2.15	29.0
	OTHER TREATMENT FACILITIES	40-R1.5	892,814.19	477,293	415,521	17,133	1.92	24.3
	TOTAL STRUCTURES AND IMPROVEMENTS		37,509,056.38	13,170,470	24,338,586	894,510	2.38	27.2
320.20	PAINTING	10-SQ	447,524.82	184,088	263,437	39,276	8.78	6.7
320.30	CHEMICAL EQUIPMENT	25-S0.5	6,563,931.98	354,026	6,209,906	518,695	7.90	12.0
	TOTAL WATER TREATMENT PLANT		44,520,513.18	13,708,584	30,811,929	1,452,481	3.26	21.2
330.00	DISTRIBUTION RESERVOIRS AND STANDPIPES	45-R1.5	9,806,864.93	3,358,961	6,447,904	240,764	2.46	26.8
331.00	TRANSMISSION AND DISTRIBUTION MAINS	80-R3	143,623,963.03	13,729,544	129,894,419	2,322,380	1.62	55.9
333.00	SERVICES	60-S2.5	39,198,130.39	9,356,668	29,841,462	708,390	1.81	42.1
334.00	METERS	25-S1.5	18,835,239.43	5,155,535	13,679,704	866,153	4.60	15.8
335.00	HYDRANTS	60-R4	7,696,446.42	2,324,418	5,372,028	128,688	1.67	41.7
339.00	OTHER PLANT AND MISCELLANEOUS EQUIPMENT	40-S2	539,255.49	370,046	169,209	8,755	1.62	19.3
	OFFICE FURNITURE AND EQUIPMENT							
340.10	COMPUTERS AND SOFTWARE	5-SQ	3,461,144.25	2,452,767	1,008,377	724,833	20.94	1.4
340.11	SOFTWARE - LARGE	8-SQ	3,665,579.00	2,875,859	789,720	518,651	14.15	1.5
340.20	FURNITURE	15-SQ	659,446.10	237,976	421,470	32,848	4.98	12.8
	TOTAL OFFICE FURNITURE AND EQUIPMENT		7,786,169.35	5,566,602	2,219,567	1,276,332	16.39	1.7
341.00	TRANSPORTATION EQUIPMENT - TRUCKS	7-L3	1,057.45	0	1,057	275	26.01	3.8
	TOOLS, SHOP AND GARAGE EQUIPMENT							
343.10	SHOP AND GARAGE EQUIPMENT	20-SQ	770,429.12	317,779	452,650	29,700	3.85	15.2
343.20	TOOLS AND WORK EQUIPMENT	20-SQ	2,070,505.75	688,280	1,382,226	102,452	4.95	13.5
	TOTAL TOOLS SHOP AND GARAGE EQUIPMENT		2,840,934.87	1,006,059	1,834,876	132,152	4.65	13.9



SUEZ WATER PENNSYLVANIA, INC.

TABLE 1. SUMMARY OF ESTIMATED SURVIVOR CURVES, ORIGINAL COST, BOOK RESERVE AND CALCULATED ANNUAL DEPRECIATION ACCRUALS RELATED TO WATER PLANT AS OF DECEMBER 31, 2017

DEPRECIABLE GROUP (1)	SURVIVOR CURVE (2)	ORIGINAL COST (3)	BOOK RESERVE (4)	FUTURE ACCRUALS (5)	ANNUAL		COMPOSITE REMAINING LIFE (8)	
					ACCRUAL AMOUNT (6)	ACCRUAL RATE (7)=(6)/(3)		
344.00	LABORATORY EQUIPMENT	15-SQ	140,443.25	96,828	43,615	4,798	3.42	9.1
346.00	COMMUNICATION EQUIPMENT	10-SQ	6,834,027.66	2,894,633	3,939,395	581,548	8.51	6.8
347.00	MISCELLANEOUS EQUIPMENT	15-SQ	147,854.10	18,345	129,509	11,091	7.50	11.7
	TOTAL DEPRECIABLE PLANT		336,386,121.82	70,272,652	266,113,468	9,239,328	2.75	28.8
	AMORTIZATION OF NET SALVAGE					204,213		
	TOTAL UTILITY PLANT IN SERVICE		340,882,878.78	70,281,368	266,113,468	9,443,541		

* Life Span Procedure was used. Curve shown is Interim Survivor Curve.

SUEZ WATER PENNSYLVANIA, INC.

TABLE 2. AMORTIZATION OF EXPERIENCED NET SALVAGE

ACCOUNT (1)	2013		2014		2015		2016		2017		NET SALVAGE (12)	SALVAGE ACCURAL (13)=(12)/5
	GROSS SALVAGE (2)	- COST OF REMOVAL (3) +	GROSS SALVAGE (4)	- COST OF REMOVAL (5) +	GROSS SALVAGE (6)	- COST OF REMOVAL (7) +	GROSS SALVAGE (8)	- COST OF REMOVAL (9) +	GROSS SALVAGE (10)	- COST OF REMOVAL (11) =		
303.00						31,870					(31,870)	(6,374)
304.20	40,035	28,672		250		991		392		82	9,647	1,929
304.30		(1,781)		815		6,690		3,491		8,380	(17,594)	(3,519)
304.51		5,900									(5,900)	(1,180)
304.53		(20,171)									20,171	4,034
306.00				1,173							(1,173)	(235)
307.00				18,328		2,450					(20,778)	(4,156)
311.20		3,202		11,306		15,818		19,218		3,725	(53,269)	(10,654)
320.10		15		22,903		278		22		501	(23,719)	(4,744)
320.20		167									(167)	(33)
320.30				250		28,976		23,239		23,442	(75,907)	(15,181)
330.00						189		13,273		11,262	(24,724)	(4,945)
331.00		9,566		22,514		64,378		194,519		237,069	(528,046)	(105,609)
333.00		7,371		7,672		11,225		33,371		42,620	(102,258)	(20,452)
334.00	35,611	7,225	47,217	156,296	14,105	202,894	5,351	(78,539)	13,554	(6,258)	(165,781)	(33,156)
335.00	8,341	806	(409)	495	4,272	2,330	2,453	3,611	903	2,742	5,575	1,115
340.10								98			(98)	(20)
340.20								47			(47)	(9)
343.20		(338)									338	68
346.00		847				2,032		786		1,796	(5,461)	(1,092)
Total	83,987	41,480	46,808	242,002	18,377	370,120	7,803	213,529	14,457	325,362	(1,021,062)	(204,213)

**PART II. DETAILED DEPRECIATION
CALCULATIONS**

CUMULATIVE DEPRECIATIVE ORIGINAL COST

SUEZ WATER PENNSYLVANIA, INC.

CUMULATIVE DEPRECIATED ORIGINAL COST BY YEAR INSTALLED
RELATED TO ORIGINAL COST AS OF DECEMBER 31, 2017

YEAR INST (1)	ORIGINAL COST (2)	ACCRUED DEPRECIATION (3)	AMOUNT		DEPRECIATED ORIGINAL COST CUMULATIVE AMOUNT (5)	PCT OF COL 4 TOTAL (6)
			(2)	(3)		
1859	11	11				0.0
1860	657	657				0.0
1866	102	102				0.0
1867	199	199				0.0
1868	99	99				0.0
1874						0.0
1878						0.0
1880	301	301				0.0
1882	360	171	189		189	0.0
1883	329	164	165		354	0.0
1885	1	1			354	0.0
1886	75	75			354	0.0
1887	36	18	18		372	0.0
1888	202	100	102		474	0.0
1889	3,255	1,612	1,643		2,117	0.0
1890	1,528	751	777		2,894	0.0
1891	1,325	1,113	212		3,106	0.0
1892	551	270	281		3,387	0.0
1893	2,490	1,225	1,265		4,652	0.0
1894	6,803	5,622	1,181		5,833	0.0
1895	4,675	2,293	2,382		8,215	0.0
1896	10,577	9,442	1,135		9,350	0.0
1897	1,107	541	566		9,916	0.0
1898	233	113	120		10,036	0.0
1899	2,111	1,026	1,085		11,121	0.0
1900	75,232	43,450	31,782		42,903	0.0
1901	15,442	7,471	7,971		50,874	0.0
1902	211	101	110		50,984	0.0
1903	110	53	57		51,041	0.0
1904	5	5			51,041	0.0
1905	760	364	396		51,437	0.0
1906	11,922	9,757	2,165		53,602	0.0
1907	9	4	5		53,607	0.0
1908	86,478	52,200	34,278		87,885	0.0
1909	82,669	56,071	26,598		114,483	0.0
1910	3,828	1,812	2,016		116,499	0.0
1911	408	191	217		116,716	0.0
1912	31,331	19,202	12,129		128,845	0.0
1913	1,018	474	544		129,389	0.0
1914	24,043	11,206	12,837		142,226	0.1
1915	2,581	1,205	1,376		143,602	0.1
1916	1,239	573	666		144,268	0.1
1917	821	491	330		144,598	0.1
1918	99	46	53		144,651	0.1
1919	906	415	491		145,142	0.1
1920	3,526	1,617	1,909		147,051	0.1

SUEZ WATER PENNSYLVANIA, INC.

CUMULATIVE DEPRECIATED ORIGINAL COST BY YEAR INSTALLED
RELATED TO ORIGINAL COST AS OF DECEMBER 31, 2017

YEAR INST (1)	ORIGINAL COST (2)	ACCRUED DEPRECIATION (3)	AMOUNT		DEPRECIATED ORIGINAL COST CUMULATIVE AMOUNT (5)	PCT OF COL 4 TOTAL (6)
			(2)	(3)		
1921	13,096	11,500	1,596		148,647	0.1
1922	9,706	8,857	849		149,496	0.1
1923	8,041	6,161	1,880		151,376	0.1
1924	2,655	1,313	1,342		152,718	0.1
1925	11,187	6,564	4,623		157,341	0.1
1926	2,430	1,758	672		158,013	0.1
1927	62,348	44,520	17,828		175,841	0.1
1928	55,271	39,274	15,997		191,838	0.1
1929	29,294	22,673	6,621		198,459	0.1
1930	10,204	4,510	5,694		204,153	0.1
1931	5,196	3,208	1,988		206,141	0.1
1932	1,570	743	827		206,968	0.1
1933	15,246	12,684	2,562		209,530	0.1
1934	4,637	2,062	2,575		212,105	0.1
1935	6,950	3,483	3,467		215,572	0.1
1936	15,615	12,536	3,079		218,651	0.1
1937	14,518	7,496	7,022		225,673	0.1
1938	10,456	4,433	6,023		231,696	0.1
1939	20,391	8,665	11,726		243,422	0.1
1940	10,341	6,744	3,597		247,019	0.1
1941	22,079	15,419	6,660		253,679	0.1
1942	14,386	6,166	8,220		261,899	0.1
1943	2,726	1,642	1,084		262,983	0.1
1944	10,708	5,175	5,533		268,516	0.1
1945	7,053	3,403	3,650		272,166	0.1
1946	24,887	12,027	12,860		285,026	0.1
1947	32,464	13,953	18,511		303,537	0.1
1948	66,363	31,513	34,850		338,387	0.1
1949	19,506	16,726	2,780		341,167	0.1
1950	36,976	20,977	15,999		357,166	0.1
1951	48,793	26,847	21,946		379,112	0.1
1952	60,594	26,248	34,346		413,458	0.2
1953	52,759	33,827	18,932		432,390	0.2
1954	14,340	8,055	6,285		438,675	0.2
1955	40,602	33,262	7,340		446,015	0.2
1956	79,644	44,467	35,177		481,192	0.2
1957	74,916	44,761	30,155		511,347	0.2
1958	204,810	129,854	74,956		586,303	0.2
1959	331,983	160,869	171,114		757,417	0.3
1960	367,520	161,008	206,512		963,929	0.4
1961	307,524	162,256	145,268		1,109,197	0.4
1962	189,885	103,158	86,727		1,195,924	0.4
1963	383,704	188,694	195,010		1,390,934	0.5
1964	794,895	396,787	398,108		1,789,042	0.7
1965	119,894	68,257	51,637		1,840,679	0.7
1966	358,777	162,812	195,965		2,036,644	0.8

SUEZ WATER PENNSYLVANIA, INC.

CUMULATIVE DEPRECIATED ORIGINAL COST BY YEAR INSTALLED
RELATED TO ORIGINAL COST AS OF DECEMBER 31, 2017

YEAR INST (1)	ORIGINAL COST (2)	ACCRUED DEPRECIATION (3)	AMOUNT		DEPRECIATED ORIGINAL COST CUMULATIVE AMOUNT (5)	PCT OF COL 4 TOTAL (6)
			(2)	(3)		
1967	322,977	146,306		176,671	2,213,315	0.8
1968	247,809	98,406		149,403	2,362,718	0.9
1969	461,397	192,418		268,979	2,631,697	1.0
1970	713,760	279,949		433,811	3,065,508	1.2
1971	525,424	246,183		279,241	3,344,749	1.3
1972	543,103	219,513		323,590	3,668,339	1.4
1973	1,026,223	407,860		618,363	4,286,702	1.6
1974	767,598	353,136		414,462	4,701,164	1.8
1975	953,352	356,177		597,175	5,298,339	2.0
1976	850,183	493,109		357,074	5,655,413	2.1
1977	858,775	358,571		500,204	6,155,617	2.3
1978	1,616,350	595,320	1,021,030		7,176,647	2.7
1979	852,193	374,397		477,796	7,654,443	2.9
1980	1,381,605	733,709		647,896	8,302,339	3.1
1981	755,800	329,814		425,986	8,728,325	3.3
1982	1,206,134	533,285		672,849	9,401,174	3.5
1983	853,390	364,939		488,451	9,889,625	3.7
1984	1,887,840	910,172		977,668	10,867,293	4.1
1985	2,966,267	1,160,653	1,805,614		12,672,907	4.8
1986	1,859,936	746,629	1,113,307		13,786,214	5.2
1987	3,950,486	1,147,184	2,803,302		16,589,516	6.2
1988	3,584,696	1,261,544	2,323,152		18,912,668	7.1
1989	3,241,252	1,004,303	2,236,949		21,149,617	7.9
1990	3,695,534	1,297,204	2,398,330		23,547,947	8.8
1991	4,157,036	1,536,153	2,620,883		26,168,830	9.8
1992	2,309,566	1,020,515	1,289,051		27,457,881	10.3
1993	8,996,716	4,766,458	4,230,258		31,688,139	11.9
1994	4,130,078	1,217,238	2,912,840		34,600,979	13.0
1995	2,883,685	745,917	2,137,768		36,738,747	13.8
1996	2,599,974	831,731	1,768,243		38,506,990	14.5
1997	6,016,093	1,253,130	4,762,963		43,269,953	16.3
1998	6,698,082	2,120,696	4,577,386		47,847,339	18.0
1999	7,089,081	2,491,472	4,597,609		52,444,948	19.7
2000	7,038,022	1,759,449	5,278,573		57,723,521	21.7
2001	6,012,232	1,513,721	4,498,511		62,222,032	23.4
2002	4,413,433	1,346,488	3,066,945		65,288,977	24.5
2003	7,298,225	1,575,244	5,722,981		71,011,958	26.7
2004	5,166,861	1,212,768	3,954,093		74,966,051	28.2
2005	14,471,867	5,514,190	8,957,677		83,923,728	31.5
2006	23,782,556	6,237,668	17,544,888		101,468,616	38.1
2007	7,409,140	1,431,033	5,978,107		107,446,723	40.4
2008	9,553,875	1,310,031	8,243,844		115,690,567	43.5
2009	10,183,605	1,886,049	8,297,556		123,988,123	46.6
2010	14,059,120	2,506,811	11,552,309		135,540,432	50.9
2011	15,008,802	4,409,658	10,599,144		146,139,576	54.9
2012	10,194,955	1,527,503	8,667,452		154,807,028	58.2

SUEZ WATER PENNSYLVANIA, INC.

CUMULATIVE DEPRECIATED ORIGINAL COST BY YEAR INSTALLED
RELATED TO ORIGINAL COST AS OF DECEMBER 31, 2017

YEAR INST (1)	ORIGINAL COST (2)	ACCRUED DEPRECIATION (3)	AMOUNT		CUMULATIVE AMOUNT (5)	PCT OF COL 4 TOTAL (6)
			(2)	(3)		
2013	7,782,886	1,062,441	6,720,445		161,527,473	60.7
2014	14,790,539	1,052,205	13,738,334		175,265,807	65.9
2015	14,970,998	1,034,219	13,936,779		189,202,586	71.1
2016	56,892,814	2,787,051	54,105,763		243,308,349	91.4
2017	22,997,196	192,070	22,805,126		266,113,475	100.0
SUBTOTAL	336,386,122	70,272,652	266,113,468			
NONDEPRECIABLE PLANT	4,496,757	8,716	4,488,041			
TOTAL	340,882,879	70,281,368	270,601,509			

UTILITY PLANT IN SERVICE

SUEZ WATER PENNSYLVANIA, INC.

ACCOUNT 304.2 STRUCTURES AND IMPROVEMENTS - PUMPING

CALCULATED REMAINING LIFE DEPRECIATION ACCRUAL
RELATED TO ORIGINAL COST AS OF DECEMBER 31, 2017

YEAR (1)	ORIGINAL COST (2)	CALCULATED ACCRUED (3)	ALLOC. BOOK RESERVE (4)	FUTURE BOOK ACCRUALS (5)	REM. LIFE (6)	ANNUAL ACCRUAL (7)
SURVIVOR CURVE.. IOWA 55-R2						
NET SALVAGE PERCENT.. 0						
1894	3,945.76	3,946	3,946			
1896	3,234.56	3,235	3,235			
1900	11,559.50	11,560	11,560			
1906	7,805.01	7,805	7,805			
1908	15,400.56	15,401	15,401			
1921	4,500.02	4,429	3,636	864	1.54	561
1923	6,690.03	6,575	5,397	1,293	1.65	784
1925	985.10	957	786	199	2.74	73
1926	99.78	97	80	20	2.84	7
1927	5,482.36	5,309	4,358	1,124	2.95	381
1928	31,464.31	30,413	24,965	6,499	3.09	2,103
1931	209.40	199	163	46	4.41	10
1933	42.67	40	33	10	4.79	2
1937	465.00	434	356	109	5.71	19
1940	1,872.03	1,726	1,417	455	6.54	70
1941	63.00	58	48	15	6.83	2
1944	227.13	205	168	59	7.80	8
1945	1,737.25	1,562	1,282	455	8.15	56
1946	427.37	382	314	113	8.50	13
1950	2,980.08	2,615	2,147	833	9.42	88
1952	790.89	684	561	230	10.26	22
1954	215.60	185	152	64	10.58	6
1956	153.69	129	106	48	11.49	4
1957	562.26	469	385	177	11.96	15
1958	632.11	527	433	199	11.93	17
1959	2,082.89	1,718	1,410	673	12.43	54
1960	154.19	126	103	51	12.92	4
1961	1,591.08	1,286	1,056	535	13.43	40
1962	330.20	266	218	112	13.46	8
1964	9,917.48	7,799	6,402	3,515	14.53	242
1965	897.47	697	572	325	15.07	22
1966	5,872.32	4,536	3,723	2,149	15.17	142
1967	7,245.30	5,525	4,535	2,710	15.72	172
1969	6,923.75	5,171	4,245	2,679	16.44	163
1970	5,863.00	4,316	3,543	2,320	17.02	136
1971	821.00	596	489	332	17.60	19
1972	13,906.43	9,935	8,155	5,751	18.19	316
1973	11,539.20	8,165	6,702	4,837	18.39	263
1974	15,029.15	10,460	8,586	6,443	19.00	339
1975	2,184.81	1,495	1,227	958	19.61	49
1976	48,715.62	32,951	27,048	21,668	19.85	1,092
1977	73.00	48	39	34	20.48	2
1978	270.98	177	145	126	21.10	6

SUEZ WATER PENNSYLVANIA, INC.

ACCOUNT 304.2 STRUCTURES AND IMPROVEMENTS - PUMPING

CALCULATED REMAINING LIFE DEPRECIATION ACCRUAL
RELATED TO ORIGINAL COST AS OF DECEMBER 31, 2017

YEAR (1)	ORIGINAL COST (2)	CALCULATED ACCRUED (3)	ALLOC. BOOK RESERVE (4)	FUTURE BOOK ACCRUALS (5)	REM. LIFE (6)	ANNUAL ACCRUAL (7)
SURVIVOR CURVE.. IOWA 55-R2						
NET SALVAGE PERCENT.. 0						
1980	12,728.00	8,019	6,582	6,146	22.02	279
1981	7,412.46	4,572	3,753	3,659	22.67	161
1982	11,911.46	7,230	5,935	5,976	22.98	260
1983	11,775.00	6,987	5,735	6,040	23.64	255
1984	53,133.53	30,796	25,279	27,855	24.30	1,146
1985	1,587.00	903	741	846	24.64	34
1986	80,828.07	44,811	36,784	44,044	25.32	1,739
1987	7,692.00	4,176	3,428	4,264	25.68	166
1988	138,137.20	72,936	59,871	78,266	26.37	2,968
1989	21,942.61	11,318	9,291	12,652	26.75	473
1990	98,108.21	49,103	40,307	57,801	27.45	2,106
1991	1,959.00	955	784	1,175	27.85	42
1993	4,122.00	1,889	1,551	2,571	28.97	89
1994	10,160.00	4,489	3,685	6,475	29.69	218
1995	9,166.00	3,918	3,216	5,950	30.13	197
1996	45,516.00	18,689	15,341	30,175	30.86	978
1997	117,264.11	46,390	38,080	79,184	31.32	2,528
1998	732,013.46	278,312	228,455	503,558	31.78	15,845
2000	5,600.51	1,941	1,593	4,008	33.01	121
2001	7,922.63	2,614	2,146	5,777	33.50	172
2002	5,476.93	1,715	1,408	4,069	34.00	120
2005	5,382.54	1,399	1,148	4,235	35.58	119
2006	9,957.35	2,405	1,974	7,983	36.12	221
2007	24,533.69	5,461	4,483	20,051	36.67	547
2008	6,444.17	1,316	1,080	5,364	37.01	145
2009	535,672.72	98,778	81,083	454,590	37.59	12,093
2010	301,293.94	49,714	40,809	260,485	37.95	6,864
2011	55,664.60	8,071	6,625	49,040	38.34	1,279
2012	46,287.20	5,777	4,742	41,545	38.56	1,077
2013	512,705.75	53,321	43,769	468,937	38.79	12,089
2014	6,440.40	532	437	6,003	38.87	154
2015	223,611.96	13,529	11,105	212,507	38.82	5,474
2016	315,350.74	11,920	9,785	305,566	38.18	8,003
2017	58,313.57	805	661	57,653	35.86	1,608
	3,721,078.15	1,049,000	868,598	2,852,480		86,880

COMPOSITE REMAINING LIFE AND ANNUAL ACCRUAL RATE, PERCENT .. 32.8 2.33

SUEZ WATER PENNSYLVANIA, INC.

ACCOUNT 304.3 STRUCTURES AND IMPROVEMENTS - WATER TREATMENT PLANT

CALCULATED REMAINING LIFE DEPRECIATION ACCRUAL
RELATED TO ORIGINAL COST AS OF DECEMBER 31, 2017

YEAR (1)	ORIGINAL COST (2)	CALCULATED ACCRUED (3)	ALLOC. BOOK RESERVE (4)	FUTURE BOOK ACCRUALS (5)	REM. LIFE (6)	ANNUAL ACCRUAL (7)
BLOOMSBURG TREATMENT PLANT						
INTERIM SURVIVOR CURVE.. IOWA 55-S1.5						
PROBABLE RETIREMENT YEAR.. 6-2028						
NET SALVAGE PERCENT.. 0						
1912	11,253.12	11,160	9,769	1,484	0.88	1,484
1941	390.74	359	314	76	6.83	11
1951	342.13	307	269	73	7.57	10
1956	76.86	68	60	17	7.94	2
1960	1,437.59	1,256	1,100	338	8.29	41
1962	267.74	233	204	64	8.19	8
1966	43.33	37	32	11	8.38	1
1971	9.54	8	7	3	8.75	
1972	95.68	80	70	26	8.85	3
1974	1,353.61	1,125	985	369	8.86	42
1976	1,354.32	1,113	974	380	9.01	42
1980	1,422.00	1,141	999	423	9.23	46
1982	761.47	603	528	234	9.35	25
1986	5,678.99	4,365	3,821	1,858	9.48	196
1988	34,666.00	26,076	22,827	11,839	9.72	1,218
1990	886.17	656	574	312	9.67	32
1992	5,966.23	4,305	3,769	2,198	9.84	223
1995	4,590.00	3,181	2,785	1,805	9.97	181
1996	3,296.00	2,253	1,972	1,324	9.95	133
1998	1,004.20	662	580	425	10.09	42
1999	11,767.95	7,620	6,671	5,097	10.07	506
2001	2,646.12	1,637	1,433	1,213	10.17	119
2002	39,601.77	23,939	20,956	18,646	10.14	1,839
2003	8,759.49	5,144	4,503	4,256	10.19	418
2004	3,380.35	1,921	1,682	1,699	10.25	166
2005	40,329.46	22,133	19,375	20,954	10.28	2,038
	181,380.86	121,382	106,258	75,123		8,826

BLOOMSBURG TREATMENT PLANT - NEW
INTERIM SURVIVOR CURVE.. IOWA 55-S1.5
PROBABLE RETIREMENT YEAR.. 6-2076
NET SALVAGE PERCENT.. 0

2016	5,829,778.36	201,710	176,577	5,653,201	41.79	135,276
	5,829,778.36	201,710	176,577	5,653,201		135,276

SUEZ WATER PENNSYLVANIA, INC.

ACCOUNT 304.3 STRUCTURES AND IMPROVEMENTS - WATER TREATMENT PLANT

CALCULATED REMAINING LIFE DEPRECIATION ACCRUAL
RELATED TO ORIGINAL COST AS OF DECEMBER 31, 2017

YEAR (1)	ORIGINAL COST (2)	CALCULATED ACCRUED (3)	ALLOC. BOOK RESERVE (4)	FUTURE BOOK ACCRUALS (5)	REM. LIFE (6)	ANNUAL ACCRUAL (7)
SIXTH STREET PLANT						
INTERIM SURVIVOR CURVE.. IOWA 55-S1.5						
PROBABLE RETIREMENT YEAR.. 6-2045						
NET SALVAGE PERCENT.. 0						
1964	44,792.41	35,709	31,260	13,533	13.61	994
1980	34,687.00	23,546	20,612	14,075	17.75	793
1984	102,973.00	65,882	57,673	45,300	18.86	2,402
1985	97,842.00	61,689	54,003	43,839	19.05	2,301
1986	35,320.00	21,920	19,189	16,131	19.26	838
1988	43,707.00	26,172	22,911	20,796	19.76	1,052
1989	18,985.00	11,146	9,757	9,228	20.04	460
1993	763,622.37	409,760	358,705	404,918	21.16	19,136
1995	4,309.00	2,201	1,927	2,382	21.55	111
1997	2,832.04	1,364	1,194	1,638	22.05	74
2000	12,075.79	5,241	4,588	7,488	22.82	328
2001	19,652.67	8,203	7,181	12,472	23.03	542
2002	20,860.96	8,342	7,303	13,558	23.26	583
2003	24,257.33	9,252	8,099	16,158	23.52	687
2004	24,519.48	8,871	7,766	16,754	23.81	704
2005	2,782,262.44	952,925	834,192	1,948,070	24.00	81,170
2006	58,487.29	18,833	16,486	42,001	24.21	1,735
2009	511.46	130	114	398	24.83	16
2010	3,237.38	745	652	2,585	25.07	103
2011	32,438.90	6,643	5,815	26,624	25.24	1,055
2015	28,996.45	2,552	2,234	26,762	25.91	1,033
2016	3,656.81	199	174	3,483	26.12	133
	4,160,026.78	1,681,325	1,471,835	2,688,192		116,250

RICHARD C. RABOLD PLANT
INTERIM SURVIVOR CURVE.. IOWA 55-S1.5
PROBABLE RETIREMENT YEAR.. 6-2043
NET SALVAGE PERCENT.. 0

1991	17,824.37	10,203	8,932	8,893	19.80	449
1993	1,569,369.50	861,270	753,957	815,413	20.14	40,487
1995	1,996.00	1,042	912	1,084	20.60	53
2003	7,686.63	3,032	2,654	5,032	22.26	226
2010	2,848.74	688	602	2,246	23.56	95
2011	2,940.92	633	554	2,387	23.71	101
2012	15,515.08	2,911	2,548	12,967	23.82	544
2013	1,000.00	158	138	862	23.99	36
	1,619,181.24	879,937	770,298	848,883		41,991

SUEZ WATER PENNSYLVANIA, INC.

ACCOUNT 304.3 STRUCTURES AND IMPROVEMENTS - WATER TREATMENT PLANT

CALCULATED REMAINING LIFE DEPRECIATION ACCRUAL
RELATED TO ORIGINAL COST AS OF DECEMBER 31, 2017

YEAR (1)	ORIGINAL COST (2)	CALCULATED ACCRUED (3)	ALLOC. BOOK RESERVE (4)	FUTURE BOOK ACCRUALS (5)	REM. LIFE (6)	ANNUAL ACCRUAL (7)
MARKET STREET PLANT						
INTERIM SURVIVOR CURVE.. IOWA 55-S1.5						
PROBABLE RETIREMENT YEAR.. 6-2024						
NET SALVAGE PERCENT.. 0						
1964	51,971.42	46,993	41,138	10,834	5.67	1,911
1965	9,550.56	8,624	7,549	2,001	5.64	355
1966	139.02	125	109	30	5.65	5
1986	8,998.00	7,512	6,576	2,422	6.23	389
1987	5,535.00	4,608	4,034	1,501	6.13	245
1988	4,826.00	3,986	3,489	1,337	6.21	215
1989	767.00	630	552	215	6.22	35
1999	6,698.01	4,981	4,360	2,338	6.38	366
2001	6,510.83	4,694	4,109	2,402	6.38	376
2002	3,118.36	2,209	1,934	1,185	6.38	186
2003	715.28	496	434	281	6.42	44
2014	2,530.24	887	776	1,754	6.48	271
	101,359.72	85,745	75,061	26,299		4,398

OLD HUMMELSTOWN PLANT
FULLY ACCRUED

1908	1,309.27	1,309	1,309			
1983	6,302.00	6,302	6,302			
1984	21,523.00	21,523	21,523			
1987	5,452.00	5,452	5,452			
1991	3,358.00	3,358	3,358			
1995	8,553.00	8,553	8,553			
1999	13,270.24	13,270	13,270			
2000	3,407.62	3,408	3,408			
2001	16,389.60	16,390	16,390			
2003	7,018.97	7,019	7,019			
	86,583.70	86,584	86,584			

SUEZ WATER PENNSYLVANIA, INC.

ACCOUNT 304.3 STRUCTURES AND IMPROVEMENTS - WATER TREATMENT PLANT

CALCULATED REMAINING LIFE DEPRECIATION ACCRUAL
RELATED TO ORIGINAL COST AS OF DECEMBER 31, 2017

YEAR (1)	ORIGINAL COST (2)	CALCULATED ACCRUED (3)	ALLOC. BOOK RESERVE (4)	FUTURE BOOK ACCRUALS (5)	REM. LIFE (6)	ANNUAL ACCRUAL (7)
HUMMELSTOWN MEMBRANE PLANT						
INTERIM SURVIVOR CURVE.. IOWA 55-S1.5						
PROBABLE RETIREMENT YEAR.. 6-2061						
NET SALVAGE PERCENT.. 0						
2006	4,400,180.64	1,163,848	1,011,211	3,388,970	31.98	105,972
2010	6,116.39	1,110	964	5,152	33.82	152
2015	4,248.57	274	238	4,011	36.26	111
	4,410,545.60	1,165,232	1,012,413	3,398,133		106,235
OTHER TREATMENT FACILITIES						
SURVIVOR CURVE.. IOWA 50-R3						
NET SALVAGE PERCENT.. 0						
1975	663.64	508	441	222	13.06	17
1985	915.00	580	504	411	18.78	22
1986	2,724.00	1,682	1,461	1,263	19.52	65
1987	8,242.00	4,952	4,303	3,939	20.26	194
1988	8,453.00	4,962	4,311	4,142	20.75	200
1991	12,418.00	6,681	5,805	6,613	22.76	291
1996	4,244.00	1,907	1,657	2,587	26.34	98
1998	201,852.42	83,042	72,151	129,701	27.90	4,649
2001	25,996.41	9,179	7,975	18,021	30.23	596
2002	7,025.86	2,341	2,034	4,992	31.01	161
2004	82,833.24	24,378	21,181	61,652	32.37	1,905
2005	12,090.80	3,310	2,876	9,215	33.16	278
2006	451,572.47	114,248	99,265	352,308	33.95	10,377
2007	123,642.36	28,685	24,923	98,719	34.75	2,841
2008	36,199.17	7,634	6,633	29,566	35.55	832
2009	9,741.31	1,847	1,605	8,137	36.34	224
2010	691,275.39	116,134	100,903	590,372	37.14	15,896
2011	80,358.65	11,748	10,207	70,151	37.95	1,849
2012	16,410.88	2,040	1,772	14,638	38.75	378
2013	131,072.79	13,396	11,639	119,434	39.55	3,020
2014	12,170.26	971	844	11,327	40.36	281
2015	38,004.49	2,185	1,898	36,106	40.98	881
2016	1,128,592.39	39,275	34,124	1,094,468	41.60	26,309
2017	1,075.95	13	11	1,065	41.87	25
	3,087,574.48	481,698	418,524	2,669,050		71,389
	19,476,430.74	4,703,613	4,117,550	15,358,881		484,365

COMPOSITE REMAINING LIFE AND ANNUAL ACCRUAL RATE, PERCENT .. 31.7 2.49

SUEZ WATER PENNSYLVANIA, INC.

ACCOUNT 304.4 STRUCTURES AND IMPROVEMENTS - TRANSMISSION AND DISTRIBUTION

CALCULATED REMAINING LIFE DEPRECIATION ACCRUAL
RELATED TO ORIGINAL COST AS OF DECEMBER 31, 2017

YEAR (1)	ORIGINAL COST (2)	CALCULATED ACCRUED (3)	ALLOC. BOOK RESERVE (4)	FUTURE BOOK ACCRUALS (5)	REM. LIFE (6)	ANNUAL ACCRUAL (7)
SURVIVOR CURVE.. IOWA 40-R3						
NET SALVAGE PERCENT.. 0						
2006	8,163.53	2,544	1,394	6,770	25.40	267
2008	3,449.20	898	492	2,957	27.00	110
2009	29,035.00	6,812	3,733	25,302	27.73	912
2010	199.00	41	22	177	28.60	6
2012	2,576.00	397	218	2,358	30.21	78
2013	3,465.00	440	241	3,224	30.96	104
2014	551.22	55	30	521	31.71	16
2016	6,801.65	295	162	6,640	33.10	201
2017	228,722.46	3,385	1,855	226,867	33.40	6,792
	282,963.06	14,867	8,147	274,816		8,486

COMPOSITE REMAINING LIFE AND ANNUAL ACCRUAL RATE, PERCENT .. 32.4 3.00

SUEZ WATER PENNSYLVANIA, INC.

ACCOUNT 304.51 STRUCTURES AND IMPROVEMENTS - OFFICES

CALCULATED REMAINING LIFE DEPRECIATION ACCRUAL
RELATED TO ORIGINAL COST AS OF DECEMBER 31, 2017

YEAR (1)	ORIGINAL COST (2)	CALCULATED ACCRUED (3)	ALLOC. BOOK RESERVE (4)	FUTURE BOOK ACCRUALS (5)	REM. LIFE (6)	ANNUAL ACCRUAL (7)
BLOOMSBURG TREATMENT PLANT - NEW						
INTERIM SURVIVOR CURVE.. IOWA 55-S1.5						
PROBABLE RETIREMENT YEAR.. 6-2076						
NET SALVAGE PERCENT.. 0						
2016	8,862,454.27	306,641	278,341	8,584,113	41.79	205,411
	8,862,454.27	306,641	278,341	8,584,113		205,411
OTHER OFFICES						
SURVIVOR CURVE.. IOWA 45-R2.5						
NET SALVAGE PERCENT.. 0						
1975	610.53	485	440	170	10.97	15
1976	280.61	220	200	81	11.41	7
1981	536.00	389	353	183	13.75	13
1985	160,627.01	107,540	97,615	63,012	16.04	3,928
1986	3,039.17	1,991	1,807	1,232	16.58	74
1987	2,779.13	1,780	1,616	1,163	17.12	68
1990	36,460.00	21,657	19,658	16,802	18.80	894
1991	3,055.00	1,765	1,602	1,453	19.37	75
1993	1,354.00	733	665	689	20.75	33
1995	2,352.00	1,191	1,081	1,271	21.95	58
1996	20,478.00	9,993	9,071	11,407	22.56	506
1997	15,046.03	7,063	6,411	8,635	23.17	373
1998	5,387.43	2,416	2,193	3,194	23.98	133
1999	109,955.03	47,193	42,838	67,117	24.60	2,728
2000	2,682.31	1,098	997	1,686	25.24	67
2001	3,036.89	1,183	1,074	1,963	25.87	76
2004	4,950.00	1,617	1,468	3,482	27.82	125
2005	2,734.14	834	757	1,977	28.48	69
2006	6,480.82	1,833	1,664	4,817	29.15	165
2007	27,857.21	7,254	6,585	21,273	29.82	713
2008	5,381.06	1,283	1,165	4,216	30.34	139
2009	5,811.60	1,249	1,134	4,678	31.03	151
2011	6,019.25	1,009	916	5,103	32.26	158
2012	13,835.71	1,987	1,804	12,032	32.81	367
2013	18,104.60	2,151	1,952	16,152	33.38	484

SUEZ WATER PENNSYLVANIA, INC.

ACCOUNT 304.51 STRUCTURES AND IMPROVEMENTS - OFFICES

CALCULATED REMAINING LIFE DEPRECIATION ACCRUAL
RELATED TO ORIGINAL COST AS OF DECEMBER 31, 2017

YEAR (1)	ORIGINAL COST (2)	CALCULATED ACCRUED (3)	ALLOC. BOOK RESERVE (4)	FUTURE BOOK ACCRUALS (5)	REM. LIFE (6)	ANNUAL ACCRUAL (7)
OTHER OFFICES						
SURVIVOR CURVE.. IOWA 45-R2.5						
NET SALVAGE PERCENT.. 0						
2014	20,454.26	1,919	1,742	18,712	33.81	553
2015	46,921.62	3,200	2,905	44,017	34.13	1,290
2017	377,158.97	5,582	5,067	372,092	33.17	11,218
	903,388.38	236,615	214,778	688,610		24,480
	9,765,842.65	543,256	493,119	9,272,723		229,891
COMPOSITE REMAINING LIFE AND ANNUAL ACCRUAL RATE, PERCENT ..					40.3	2.35

SUEZ WATER PENNSYLVANIA, INC.

ACCOUNT 304.52 STRUCTURES AND IMPROVEMENTS - STORES, SHOP AND GARAGE

CALCULATED REMAINING LIFE DEPRECIATION ACCRUAL
RELATED TO ORIGINAL COST AS OF DECEMBER 31, 2017

YEAR (1)	ORIGINAL COST (2)	CALCULATED ACCRUED (3)	ALLOC. BOOK RESERVE (4)	FUTURE BOOK ACCRUALS (5)	REM. LIFE (6)	ANNUAL ACCRUAL (7)
SUMMIT VIEW MAINTENANCE BUILDING						
INTERIM SURVIVOR CURVE.. IOWA 60-S0.5						
PROBABLE RETIREMENT YEAR.. 6-2043						
NET SALVAGE PERCENT.. 0						
2003	1,381,513.01	552,882	501,857	879,656	21.73	40,481
	1,381,513.01	552,882	501,857	879,656		40,481
OTHER MAINTENANCE BUILDINGS						
SURVIVOR CURVE.. IOWA 35-S2.5						
NET SALVAGE PERCENT.. 0						
1935	221.47	221	221			
1941	2,898.95	2,899	2,899			
1942	88.55	89	89			
1944	491.00	491	491			
1946	1,813.15	1,813	1,813			
1947	1,090.56	1,091	1,091			
1951	653.01	647	584	69	0.62	69
1961	1,724.51	1,656	1,494	230	2.32	99
1965	82.35	78	70	12	3.06	4
1971	13,581.00	12,440	11,226	2,355	4.26	553
1975	461.00	411	371	90	5.12	18
1982	1,375.00	1,147	1,035	340	7.06	48
1983	23,752.00	19,586	17,675	6,077	7.34	828
1984	3,232.00	2,631	2,374	858	7.65	112
1985	24,261.00	19,477	17,577	6,684	7.98	838
1986	181.00	143	129	52	8.34	6
1991	14,597.00	10,444	9,425	5,172	10.54	491
1993	37,857.00	25,690	23,183	14,674	11.60	1,265
1995	1,684.00	1,076	971	713	12.71	56
1996	1,880.00	1,164	1,050	830	13.22	63
1999	11,851.41	6,511	5,876	5,976	15.17	394
2007	25,590.36	8,383	7,565	18,025	21.55	836
2008	1,743.56	519	468	1,275	22.45	57
2010	2,938.32	692	624	2,314	24.35	95
2012	15,036.93	2,604	2,350	12,687	26.25	483
	189,085.13	121,903	110,653	78,432		6,315
	1,570,598.14	674,785	612,510	958,088		46,796

COMPOSITE REMAINING LIFE AND ANNUAL ACCRUAL RATE, PERCENT .. 20.5 2.98

SUEZ WATER PENNSYLVANIA, INC.

ACCOUNT 304.53 STRUCTURES AND IMPROVEMENTS - MISCELLANEOUS

CALCULATED REMAINING LIFE DEPRECIATION ACCRUAL
RELATED TO ORIGINAL COST AS OF DECEMBER 31, 2017

YEAR (1)	ORIGINAL COST (2)	CALCULATED ACCRUED (3)	ALLOC. BOOK RESERVE (4)	FUTURE BOOK ACCRUALS (5)	REM. LIFE (6)	ANNUAL ACCRUAL (7)
SURVIVOR CURVE.. IOWA 25-S2						
NET SALVAGE PERCENT.. 0						
1956	1,320.32	1,320	1,320			
1993	9,821.00	7,916	7,180	2,641	5.90	448
1997	72,965.93	53,703	48,713	24,253	7.35	3,300
1998	690.00	494	448	242	7.75	31
2000	1,738.00	1,162	1,054	684	8.68	79
2001	106,231.47	68,360	62,007	44,224	9.14	4,839
2002	37,410.72	23,023	20,884	16,527	9.69	1,706
2008	18,868.10	7,815	7,089	11,779	13.44	876
2010	40,579.60	13,545	12,286	28,294	14.97	1,890
2011	21,330.73	6,212	5,635	15,696	15.82	992
2012	15,932.88	3,943	3,576	12,357	16.72	739
2013	3,731.51	759	689	3,043	17.62	173
2014	21,418.31	3,397	3,081	18,337	18.57	987
	352,038.57	191,649	173,962	178,077		16,060
COMPOSITE REMAINING LIFE AND ANNUAL ACCRUAL RATE, PERCENT ..						11.1 4.56

SUEZ WATER PENNSYLVANIA, INC.

ACCOUNT 305 COLLECTING AND IMPOUNDING RESERVOIRS

CALCULATED REMAINING LIFE DEPRECIATION ACCRUAL
RELATED TO ORIGINAL COST AS OF DECEMBER 31, 2017

YEAR (1)	ORIGINAL COST (2)	CALCULATED ACCRUED (3)	ALLOC. BOOK RESERVE (4)	FUTURE BOOK ACCRUALS (5)	REM. LIFE (6)	ANNUAL ACCRUAL (7)
SURVIVOR CURVE.. IOWA 65-S1						
NET SALVAGE PERCENT.. 0						
1896	6,209.00	6,111	5,656	553	1.95	284
1909	27,130.00	25,904	23,974	3,156	5.14	614
1927	38,379.41	34,388	31,825	6,554	10.51	624
1928	4,136.58	3,665	3,392	745	11.52	65
1958	854.62	636	589	266	20.50	13
1982	8,214.00	4,491	4,156	4,058	29.44	138
1983	2,858.00	1,528	1,414	1,444	30.01	48
1985	21,211.00	10,892	10,080	11,131	30.79	362
1986	1,583.00	793	734	849	31.40	27
1992	7,752.00	3,321	3,073	4,679	34.02	138
2010	1.00			1	44.86	
2015	316,303.78	15,436	14,286	302,018	48.78	6,191
	434,632.39	107,165	99,179	335,453		8,504

COMPOSITE REMAINING LIFE AND ANNUAL ACCRUAL RATE, PERCENT 39.4 1.96

SUEZ WATER PENNSYLVANIA, INC.

ACCOUNT 306 LAKE, RIVER AND OTHER INTAKES

CALCULATED REMAINING LIFE DEPRECIATION ACCRUAL
RELATED TO ORIGINAL COST AS OF DECEMBER 31, 2017

YEAR (1)	ORIGINAL COST (2)	CALCULATED ACCRUED (3)	ALLOC. BOOK RESERVE (4)	FUTURE BOOK ACCRUALS (5)	REM. LIFE (6)	ANNUAL ACCRUAL (7)
ROCKVILLE INTAKE						
INTERIM SURVIVOR CURVE.. IOWA 65-R2.5						
PROBABLE RETIREMENT YEAR.. 6-2046						
NET SALVAGE PERCENT.. 0						
1970	89,317.00	63,219	59,373	29,944	19.61	1,527
1971	736.00	513	482	254	20.17	13
1982	7,705.52	4,677	4,392	3,313	22.98	144
1985	170,185.00	98,452	92,462	77,723	23.68	3,282
1987	3,952.00	2,218	2,083	1,869	23.85	78
1991	393,848.00	204,565	192,119	201,729	24.52	8,227
1992	87,620.00	44,458	41,753	45,867	24.75	1,853
1997	96,018.42	42,911	40,300	55,718	25.37	2,196
1998	11,870.75	5,139	4,826	7,044	25.55	276
1999	635,472.94	266,899	250,661	384,812	25.55	15,061
2010	5,666.03	1,253	1,177	4,489	26.40	170
2011	12,963.41	2,554	2,399	10,565	26.50	399
2012	2,944.15	507	476	2,468	26.45	93
2013	1,628.05	237	223	1,405	26.46	53
	1,519,927.27	737,602	692,727	827,200		33,372

HUMMELSTOWN INTAKE
INTERIM SURVIVOR CURVE.. IOWA 65-R2.5
PROBABLE RETIREMENT YEAR.. 6-2061
NET SALVAGE PERCENT.. 0

2006	1,335,191.80	320,980	301,452	1,033,740	36.34	28,446
	1,335,191.80	320,980	301,452	1,033,740		28,446

OTHER INTAKES
SURVIVOR CURVE.. IOWA 50-S1
NET SALVAGE PERCENT.. 0

1909	1,166.49	1,166	1,166			
1928	1,872.20	1,810	1,698	174	3.09	56
1933	4,581.51	4,374	4,104	478	4.00	120
1959	38,851.76	32,503	30,494	8,358	11.43	731
1960	638.58	529	496	142	11.94	12
1962	65.57	53	50	16	12.53	1
1965	256.72	204	191	65	13.72	5
1973	1,216.00	893	838	378	16.11	23
1993	6,945.00	3,505	3,288	3,657	24.04	152
1996	1,668.00	767	720	948	25.23	38

SUEZ WATER PENNSYLVANIA, INC.

ACCOUNT 306 LAKE, RIVER AND OTHER INTAKES

CALCULATED REMAINING LIFE DEPRECIATION ACCRUAL
RELATED TO ORIGINAL COST AS OF DECEMBER 31, 2017

YEAR (1)	ORIGINAL COST (2)	CALCULATED ACCRUED (3)	ALLOC. BOOK RESERVE (4)	FUTURE BOOK ACCRUALS (5)	REM. LIFE (6)	ANNUAL ACCRUAL (7)
OTHER INTAKES						
SURVIVOR CURVE.. IOWA 50-S1						
NET SALVAGE PERCENT.. 0						
2002	9,792.71	3,461	3,247	6,546	28.36	231
2004	5,234.37	1,647	1,545	3,689	29.42	125
2006	21,794.95	5,941	5,574	16,221	30.69	529
2007	4,878.99	1,230	1,154	3,725	31.17	120
2008	3,712.03	853	800	2,912	31.82	92
2010	2,209.36	408	383	1,827	33.15	55
2013	2,374.00	268	251	2,123	35.34	60
2014	6,048.30	533	500	5,548	36.18	153
2016	396,417.99	15,104	14,171	382,247	37.87	10,094
	509,724.53	75,249	70,671	439,054		12,597
	3,364,843.60	1,133,831	1,064,850	2,299,994		74,415
COMPOSITE REMAINING LIFE AND ANNUAL ACCRUAL RATE, PERCENT					30.9	2.21

SUEZ WATER PENNSYLVANIA, INC.

ACCOUNT 307 WELLS AND SPRINGS

CALCULATED REMAINING LIFE DEPRECIATION ACCRUAL
RELATED TO ORIGINAL COST AS OF DECEMBER 31, 2017

YEAR (1)	ORIGINAL COST (2)	CALCULATED ACCRUED (3)	ALLOC. BOOK RESERVE (4)	FUTURE BOOK ACCRUALS (5)	REM. LIFE (6)	ANNUAL ACCRUAL (7)
SURVIVOR CURVE.. IOWA 48-R2						
NET SALVAGE PERCENT.. 0						
1937	2,072.00	2,018	2,072			
1946	1,003.00	939	1,003			
1952	3,832.61	3,489	3,833			
1954	3,296.32	2,972	3,296			
1955	225.00	202	225			
1963	3,667.08	3,118	3,667			
1966	7,300.26	6,053	7,300			
1970	1,574.00	1,248	1,574			
1972	752.69	586	740	13	12.98	1
1973	628.00	481	607	21	13.64	2
1977	3,894.00	2,823	3,563	331	15.36	22
1978	3,982.00	2,847	3,593	389	15.75	25
1982	2,708.00	1,807	2,281	427	17.69	24
1984	9,408.64	6,020	7,598	1,811	18.86	96
1985	3,793.00	2,379	3,003	790	19.32	41
1986	46,736.65	28,706	36,230	10,507	19.78	531
1987	26,451.00	15,892	20,058	6,393	20.26	316
1988	37,690.38	22,015	27,786	9,904	21.01	471
1989	36,964.00	21,069	26,592	10,372	21.50	482
1991	49,043.00	26,513	33,462	15,581	22.52	692
1992	4,135.00	2,172	2,741	1,394	23.04	61
1993	71,429.66	36,401	45,942	25,488	23.58	1,081
1994	110,452.00	54,508	68,796	41,656	24.12	1,727
1995	19,745.00	9,418	11,887	7,858	24.67	319
1997	3,715.04	1,645	2,076	1,639	25.80	64
1998	51,372.00	21,838	27,562	23,810	26.37	903
2000	16,796.00	6,525	8,235	8,561	27.55	311
2001	34,771.24	12,851	16,219	18,552	28.14	659
2004	101,589.10	31,675	39,978	61,611	29.79	2,068
2005	105,076.05	30,735	38,791	66,285	30.24	2,192
2006	36,935.28	10,024	12,652	24,283	30.87	787
2007	11,613.99	2,915	3,679	7,935	31.34	253
2008	7,462.99	1,716	2,166	5,297	31.82	166
2009	4,059.00	845	1,066	2,993	32.32	93
2010	67,794.29	12,664	15,984	51,810	32.66	1,586
2011	5,963.00	977	1,233	4,730	33.18	143
2012	1,879.00	265	334	1,545	33.56	46

SUEZ WATER PENNSYLVANIA, INC.

ACCOUNT 307 WELLS AND SPRINGS

CALCULATED REMAINING LIFE DEPRECIATION ACCRUAL
RELATED TO ORIGINAL COST AS OF DECEMBER 31, 2017

YEAR (1)	ORIGINAL COST (2)	CALCULATED ACCRUED (3)	ALLOC. BOOK RESERVE (4)	FUTURE BOOK ACCRUALS (5)	REM. LIFE (6)	ANNUAL ACCRUAL (7)
SURVIVOR CURVE.. IOWA 48-R2						
NET SALVAGE PERCENT.. 0						
2013	8,751.00	1,027	1,296	7,455	33.82	220
2014	89,646.19	8,373	10,568	79,078	33.96	2,329
2017	29,834.35	465	587	29,247	31.45	930
	1,028,041.81	398,216	500,275	527,767		18,641
COMPOSITE REMAINING LIFE AND ANNUAL ACCRUAL RATE, PERCENT ..						28.3 1.81

SUEZ WATER PENNSYLVANIA, INC.

ACCOUNT 308 INFILTRATION GALLERIES AND TUNNELS

CALCULATED REMAINING LIFE DEPRECIATION ACCRUAL
RELATED TO ORIGINAL COST AS OF DECEMBER 31, 2017

YEAR (1)	ORIGINAL COST (2)	CALCULATED ACCRUED (3)	ALLOC. BOOK RESERVE (4)	FUTURE BOOK ACCRUALS (5)	REM. LIFE (6)	ANNUAL ACCRUAL (7)
SURVIVOR CURVE.. IOWA 40-R2.5						
NET SALVAGE PERCENT.. 0						
1989	3,046.00	2,023	1,630	1,416	14.42	98
2016	10,312.04	486	392	9,920	30.35	327
	13,358.04	2,509	2,022	11,336		425
COMPOSITE REMAINING LIFE AND ANNUAL ACCRUAL RATE, PERCENT ..						26.7 3.18

SUEZ WATER PENNSYLVANIA, INC.

ACCOUNT 311.2 PUMPING EQUIPMENT - ELECTRIC PUMPING EQUIPMENT

CALCULATED REMAINING LIFE DEPRECIATION ACCRUAL
RELATED TO ORIGINAL COST AS OF DECEMBER 31, 2017

YEAR (1)	ORIGINAL COST (2)	CALCULATED ACCRUED (3)	ALLOC. BOOK RESERVE (4)	FUTURE BOOK ACCRUALS (5)	REM. LIFE (6)	ANNUAL ACCRUAL (7)
SURVIVOR CURVE.. IOWA 36-R0.5						
NET SALVAGE PERCENT.. 0						
1894	551.41	551	551			
1919	0.25					
1921	7,232.40	7,232	7,232			
1924	0.18					
1926	1,024.23	1,024	1,024			
1927	128.30	128	128			
1928	1,003.84	1,004	1,004			
1931	0.36					
1936	0.11					
1943	178.16	178	178			
1945	0.36					
1946	318.23	318	318			
1947	67.68	67	68			
1950	2,328.77	2,264	2,329			
1951	8.20	8	8			
1952	1.00	1	1			
1954	531.22	499	531			
1955	1,535.26	1,439	1,535			
1957	100.71	93	101			
1958	2,796.21	2,562	2,796			
1959	159.20	145	159			
1960	25.00	23	25			
1961	117.54	106	118			
1962	3,477.27	3,088	3,477			
1963	8,466.95	7,475	8,467			
1964	4,419.07	3,877	4,419			
1965	1,232.06	1,074	1,232			
1966	19,142.36	16,462	19,142			
1967	299.99	256	300			
1968	564.60	478	565			
1971	5,417.26	4,458	5,310	107	10.00	11
1972	5,180.45	4,219	5,025	155	10.37	15
1973	2,927.08	2,357	2,807	120	10.75	11
1974	29,652.76	23,604	28,115	1,538	11.15	138
1975	14,589.17	11,533	13,737	852	11.26	76
1976	9,423.66	7,352	8,757	667	11.69	57
1977	3,163.37	2,434	2,899	264	12.13	22
1978	20,109.66	15,251	18,166	1,944	12.58	155
1979	58,879.22	44,207	52,655	6,224	12.78	487
1980	110,683.28	81,773	97,401	13,282	13.26	1,002
1981	38,640.00	28,207	33,598	5,042	13.50	373
1982	155,956.37	111,836	133,209	22,747	14.00	1,625
1983	29,490.00	20,855	24,841	4,649	14.28	326

SUEZ WATER PENNSYLVANIA, INC.

ACCOUNT 311.2 PUMPING EQUIPMENT - ELECTRIC PUMPING EQUIPMENT

CALCULATED REMAINING LIFE DEPRECIATION ACCRUAL
RELATED TO ORIGINAL COST AS OF DECEMBER 31, 2017

YEAR (1)	ORIGINAL COST (2)	CALCULATED ACCRUED (3)	ALLOC. BOOK RESERVE (4)	FUTURE BOOK ACCRUALS (5)	REM. LIFE (6)	ANNUAL ACCRUAL (7)
SURVIVOR CURVE.. IOWA 36-R0.5						
NET SALVAGE PERCENT.. 0						
1984	373,426.59	260,204	309,931	63,496	14.58	4,355
1985	111,535.14	76,123	90,671	20,864	15.12	1,380
1986	99,025.34	66,446	79,144	19,881	15.45	1,287
1987	76,059.00	50,108	59,684	16,375	15.80	1,036
1988	198,829.47	128,444	152,991	45,838	16.16	2,837
1989	172,672.99	109,250	130,129	42,544	16.55	2,571
1990	268,847.93	167,089	199,021	69,827	16.75	4,169
1991	15,081.54	9,151	10,900	4,182	17.17	244
1992	44,337.00	26,230	31,243	13,094	17.60	744
1993	532,401.00	307,834	366,664	165,737	17.87	9,275
1994	172,306.00	96,767	115,260	57,046	18.34	3,110
1995	51,665.00	28,250	33,649	18,016	18.65	966
1996	117,563.00	62,426	74,356	43,207	18.99	2,275
1997	116,271.60	59,833	71,268	45,004	19.34	2,327
1998	363,039.66	181,229	215,863	147,177	19.56	7,524
1999	1,507,477.56	725,097	863,669	643,809	19.96	32,255
2000	71,167.84	33,008	39,316	31,852	20.23	1,574
2001	197,702.71	88,413	105,309	92,394	20.40	4,529
2002	91,137.32	38,989	46,440	44,697	20.73	2,156
2003	84,329.26	34,482	41,072	43,257	20.96	2,064
2004	13,609.71	5,291	6,302	7,308	21.22	344
2005	233.54	86	102	132	21.40	6
2006	14.76	5	6	9	21.50	
2007	82,839.27	27,055	32,225	50,614	21.65	2,338
2008	94,233.67	28,647	34,122	60,112	21.75	2,764
2009	200,338.18	56,375	67,149	133,189	21.71	6,135
2010	341,559.77	87,610	104,353	237,207	21.74	10,911
2011	117,183.48	27,116	32,298	84,885	21.59	3,932
2012	85,467.67	17,487	20,829	64,639	21.38	3,023
2013	40,939.19	7,205	8,582	32,357	21.07	1,536
2014	128,947.49	18,775	22,363	106,584	20.54	5,189
2015	279,166.42	31,406	37,408	241,758	19.72	12,260
2016	6,364,603.58	479,891	571,602	5,793,002	18.38	315,180
2017	1,137,403.65	36,397	43,353	1,094,051	15.12	72,358
	14,091,239.53	3,781,157	4,499,502	9,591,738		526,952

COMPOSITE REMAINING LIFE AND ANNUAL ACCRUAL RATE, PERCENT .. 18.2 3.74

SUEZ WATER PENNSYLVANIA, INC.

ACCOUNT 311.3 PUMPING EQUIPMENT - OIL ENGINE PUMPING EQUIPMENT

CALCULATED REMAINING LIFE DEPRECIATION ACCRUAL
RELATED TO ORIGINAL COST AS OF DECEMBER 31, 2017

YEAR (1)	ORIGINAL COST (2)	CALCULATED ACCRUED (3)	ALLOC. BOOK RESERVE (4)	FUTURE BOOK ACCRUALS (5)	REM. LIFE (6)	ANNUAL ACCRUAL (7)
SURVIVOR CURVE.. IOWA 35-R2						
NET SALVAGE PERCENT.. 0						
1988	886.00	643	861	25	11.15	2
1990	15,911.81	11,027	14,770	1,142	12.18	94
1993	232,630.00	149,325	200,017	32,613	13.67	2,386
2003	1,598.77	688	922	677	19.17	35
2006	63,129.01	22,505	30,145	32,984	20.76	1,589
	314,155.59	184,188	246,715	67,441		4,106
COMPOSITE REMAINING LIFE AND ANNUAL ACCRUAL RATE, PERCENT ..						16.4 1.31

SUEZ WATER PENNSYLVANIA, INC.

ACCOUNT 320.1 WATER TREATMENT PLANT - STRUCTURES AND IMPROVEMENTS

CALCULATED REMAINING LIFE DEPRECIATION ACCRUAL
RELATED TO ORIGINAL COST AS OF DECEMBER 31, 2017

YEAR (1)	ORIGINAL COST (2)	CALCULATED ACCRUED (3)	ALLOC. BOOK RESERVE (4)	FUTURE BOOK ACCRUALS (5)	REM. LIFE (6)	ANNUAL ACCRUAL (7)
BLOOMSBURG TREATMENT PLANT						
INTERIM SURVIVOR CURVE.. IOWA 50-R1.5						
PROBABLE RETIREMENT YEAR.. 6-2028						
NET SALVAGE PERCENT.. 0						
1992	320,608.00	232,184	305,006	15,602	9.71	1,607
2000	2,999.53	1,916	2,517	483	9.90	49
2001	12,446.68	7,763	10,198	2,249	9.96	226
2003	2,300.00	1,364	1,792	508	9.95	51
	338,354.21	243,227	319,512	18,842		1,933
BLOOMSBURG TREATMENT PLANT - NEW						
INTERIM SURVIVOR CURVE.. IOWA 50-R1.5						
PROBABLE RETIREMENT YEAR.. 6-2076						
NET SALVAGE PERCENT.. 0						
2016	13,501,911.63	644,041	846,036	12,655,876	29.95	422,567
	13,501,911.63	644,041	846,036	12,655,876		422,567
SIXTH STREET PLANT						
INTERIM SURVIVOR CURVE.. IOWA 50-R1.5						
PROBABLE RETIREMENT YEAR.. 6-2045						
NET SALVAGE PERCENT.. 0						
1964	82,182.72	66,387	82,183			
1974	32,297.00	23,745	31,220	1,077	15.67	69
1975	21,199.00	15,407	20,257	942	15.98	59
1980	349,740.19	238,698	313,840	35,900	17.45	2,057
1982	39,891.00	26,340	34,632	5,259	18.26	288
1983	32,723.00	21,335	28,051	4,672	18.41	254
1984	1,125.00	724	952	173	18.58	9
1985	10,774.00	6,793	8,931	1,843	19.05	97
1986	815.00	506	665	150	19.26	8
1987	5,063.00	3,088	4,060	1,003	19.50	51
1988	2,483.00	1,487	1,955	528	19.76	27
1989	21,664.00	12,782	16,806	4,858	19.81	245
1990	34,197.00	19,749	25,966	8,231	20.12	409
1991	62,773.00	35,599	46,806	15,967	20.23	789
1992	45,268.00	25,051	32,937	12,331	20.58	599
1993	2,199,666.60	1,190,899	1,565,792	633,874	20.75	30,548
1994	162,235.00	85,790	112,797	49,438	20.94	2,361
1995	4,663.00	2,402	3,158	1,505	21.17	71
1996	182,364.00	91,747	120,629	61,735	21.24	2,907

SUEZ WATER PENNSYLVANIA, INC.

ACCOUNT 320.1 WATER TREATMENT PLANT - STRUCTURES AND IMPROVEMENTS

CALCULATED REMAINING LIFE DEPRECIATION ACCRUAL
RELATED TO ORIGINAL COST AS OF DECEMBER 31, 2017

YEAR (1)	ORIGINAL COST (2)	CALCULATED ACCRUED (3)	ALLOC. BOOK RESERVE (4)	FUTURE BOOK ACCRUALS (5)	REM. LIFE (6)	ANNUAL ACCRUAL (7)
SIXTH STREET PLANT						
INTERIM SURVIVOR CURVE.. IOWA 50-R1.5						
PROBABLE RETIREMENT YEAR.. 6-2045						
NET SALVAGE PERCENT.. 0						
1997	10,831.82	5,285	6,949	3,883	21.52	180
1998	218,160.45	103,364	135,903	82,258	21.65	3,799
1999	293,541.48	134,677	177,073	116,468	21.82	5,338
2000	20,721.54	9,211	12,111	8,611	21.87	394
2001	55,249.67	23,702	31,163	24,086	21.96	1,097
2002	208,806.30	86,091	113,192	95,614	22.09	4,328
2003	99,879.23	39,392	51,793	48,087	22.26	2,160
2004	211,464.19	79,637	104,707	106,758	22.34	4,779
2005	4,666,211.79	1,668,171	2,193,309	2,472,903	22.47	110,054
2006	616,102.19	208,304	273,878	342,224	22.51	15,203
2008	330,307.75	97,903	128,723	201,585	22.55	8,939
2009	11,964.12	3,275	4,306	7,658	22.56	339
2010	95,713.36	23,833	31,336	64,378	22.62	2,846
2011	34,091.51	7,623	10,023	24,069	22.57	1,066
2012	37,626.38	7,390	9,716	27,910	22.51	1,240
2013	22,852.37	3,825	5,029	17,823	22.38	796
2014	55,670.75	7,582	9,969	45,702	22.21	2,058
2015	2,204.11	225	296	1,908	21.95	87
2016	198,887.78	13,067	17,180	181,707	21.33	8,519
2017	17,543.03	433	569	16,974	19.74	860
	10,498,953.33	4,391,519	5,768,860	4,730,093		214,930

RICHARD C. RABOLD PLANT
INTERIM SURVIVOR CURVE.. IOWA 50-R1.5
PROBABLE RETIREMENT YEAR.. 6-2043
NET SALVAGE PERCENT.. 0

1909	9,947.61	9,948	9,948			
1933	6,834.00	6,468	6,834			
1934	1.69	2	2			
1960	508.33	424	508			
1976	240,408.00	173,599	228,990	11,418	15.97	715
1977	16,375.00	11,672	15,396	979	16.32	60
1982	3,104.00	2,083	2,748	356	17.41	20
1985	100.00	64	84	16	18.26	1
1989	2,151.00	1,287	1,698	453	19.12	24
1990	9,634.00	5,670	7,479	2,155	19.23	112
1992	132,703.00	74,791	98,655	34,048	19.75	1,724
1993	1,041,144.39	576,482	760,421	280,723	19.75	14,214

SUEZ WATER PENNSYLVANIA, INC.

ACCOUNT 320.1 WATER TREATMENT PLANT - STRUCTURES AND IMPROVEMENTS

CALCULATED REMAINING LIFE DEPRECIATION ACCRUAL
RELATED TO ORIGINAL COST AS OF DECEMBER 31, 2017

YEAR (1)	ORIGINAL COST (2)	CALCULATED ACCRUED (3)	ALLOC. BOOK RESERVE (4)	FUTURE BOOK ACCRUALS (5)	REM. LIFE (6)	ANNUAL ACCRUAL (7)
RICHARD C. RABOLD PLANT						
INTERIM SURVIVOR CURVE.. IOWA 50-R1.5						
PROBABLE RETIREMENT YEAR.. 6-2043						
NET SALVAGE PERCENT.. 0						
1994	8,888.00	4,804	6,337	2,551	19.98	128
2009	1,555.49	442	583	972	21.44	45
2010	30,682.16	7,962	10,502	20,180	21.40	943
2011	29,496.46	6,884	9,080	20,416	21.35	956
2013	2,626.71	460	607	2,020	21.21	95
2015	207,777.52	22,274	29,381	178,397	20.81	8,573
2016	9,069.23	624	823	8,246	20.29	406
2017	3,578.56	92	121	3,457	18.84	183
	1,756,585.15	906,032	1,190,197	566,388		28,199

MARKET STREET PLANT
INTERIM SURVIVOR CURVE.. IOWA 50-R1.5
PROBABLE RETIREMENT YEAR.. 6-2024
NET SALVAGE PERCENT.. 0

1964	17,630.97	15,942	17,631			
1965	210.25	190	210			
1968	1,834.00	1,643	1,834			
1985	2,151.00	1,811	2,151			
1986	4,743.00	3,974	4,743			
1987	1,012.00	843	1,012			
1988	1,547.00	1,278	1,547			
1989	13,488.00	11,071	13,488			
1991	1,081.00	877	1,081			
1992	1,799.00	1,445	1,799			
2000	3,226.59	2,372	3,227			
2001	7,336.96	5,302	7,337			
2002	42,716.60	30,325	42,124	592	6.33	94
2004	19,675.42	13,387	18,596	1,080	6.34	170
2009	3,704.45	2,122	2,948	757	6.34	119
2011	276.59	140	194	82	6.34	13
2013	35,393.07	14,702	20,423	14,971	6.33	2,365
2014	4,741.09	1,689	2,346	2,395	6.32	379
2015	30,054.86	8,530	11,849	18,206	6.31	2,885
	192,621.85	117,643	154,540	38,082		6,025

SUEZ WATER PENNSYLVANIA, INC.

ACCOUNT 320.1 WATER TREATMENT PLANT - STRUCTURES AND IMPROVEMENTS

CALCULATED REMAINING LIFE DEPRECIATION ACCRUAL
RELATED TO ORIGINAL COST AS OF DECEMBER 31, 2017

YEAR (1)	ORIGINAL COST (2)	CALCULATED ACCRUED (3)	ALLOC. BOOK RESERVE (4)	FUTURE BOOK ACCRUALS (5)	REM. LIFE (6)	ANNUAL ACCRUAL (7)
OLD HUMMELSTOWN PLANT FULLY ACCRUED						
1908	4,950.55	4,951	4,951			
1917	207.30	207	207			
1922	7,324.97	7,325	7,325			
1931	181.24	181	181			
1954	206.47	206	206			
1960	517.38	517	517			
1962	1,554.21	1,554	1,554			
1971	56,762.98	56,763	56,763			
1977	47,799.00	47,799	47,799			
1978	29,711.00	29,711	29,711			
1979	13,197.00	13,197	13,197			
1980	17,683.18	17,683	17,683			
1981	52,998.00	52,998	52,998			
1982	3,640.00	3,640	3,640			
1983	31,609.00	31,609	31,609			
1984	32,262.00	32,262	32,262			
1985	914.00	914	914			
1986	7,375.00	7,375	7,375			
1987	5,303.00	5,303	5,303			
1990	64,666.00	64,666	64,666			
1991	235,997.00	235,997	235,997			
1992	11,868.00	11,868	11,868			
1994	31,554.00	31,554	31,554			
1999	139,931.86	139,932	139,932			
2000	30,976.50	30,976	30,976			
2001	25,263.56	25,264	25,264			
2003	526.26	526	526			
2004	3,454.18	3,454	3,455			
	858,433.64	858,432	858,434			

HUMMELSTOWN MEMBRANE PLANT
INTERIM SURVIVOR CURVE.. IOWA 50-R1.5
PROBABLE RETIREMENT YEAR.. 6-2061
NET SALVAGE PERCENT.. 0

2006	7,934,795.16	2,253,482	3,172,019	4,762,776	28.99	164,290
2009	2,669.33	599	843	1,826	29.38	62
2010	35,133.40	7,139	10,049	25,084	29.40	853
2011	1,444,914.45	262,107	368,944	1,075,971	29.34	36,672

SUEZ WATER PENNSYLVANIA, INC.

ACCOUNT 320.1 WATER TREATMENT PLANT - STRUCTURES AND IMPROVEMENTS

CALCULATED REMAINING LIFE DEPRECIATION ACCRUAL
RELATED TO ORIGINAL COST AS OF DECEMBER 31, 2017

YEAR (1)	ORIGINAL COST (2)	CALCULATED ACCRUED (3)	ALLOC. BOOK RESERVE (4)	FUTURE BOOK ACCRUALS (5)	REM. LIFE (6)	ANNUAL ACCRUAL (7)
HUMMELSTOWN MEMBRANE PLANT						
INTERIM SURVIVOR CURVE.. IOWA 50-R1.5						
PROBABLE RETIREMENT YEAR.. 6-2061						
NET SALVAGE PERCENT.. 0						
2014	13,281.37	1,437	2,023	11,259	28.86	390
2015	7,484.41	606	853	6,631	28.36	234
2017	31,104.26	616	867	30,237	24.75	1,222
	9,469,382.38	2,525,986	3,555,598	5,913,784		203,723
OTHER TREATMENT FACILITIES						
SURVIVOR CURVE.. IOWA 40-R1.5						
NET SALVAGE PERCENT.. 0						
1929	17,412.05	17,412	17,412			
1957	0.31		0			
1958	54,748.74	50,166	54,749			
1959	2,391.51	2,182	2,392			
1960	5,199.01	4,694	5,199			
1962	7,761.03	6,935	7,761			
1973	165.00	135	165			
1978	29,680.00	22,860	29,680			
1980	1,393.00	1,045	1,393			
1984	13,333.00	9,336	13,333			
1996	8,770.54	4,563	7,022	1,748	19.82	88
1997	181,545.78	91,172	140,308	41,237	20.32	2,029
1998	1,566.87	758	1,167	400	20.82	19
1999	234.62	109	168	67	21.34	3
2000	7,376.25	3,279	5,046	2,330	21.87	107
2002	2,576.89	1,043	1,605	972	22.81	43
2003	697.56	268	412	285	23.24	12
2004	5,135.24	1,865	2,870	2,265	23.67	96
2005	11,600.36	3,958	6,091	5,509	24.13	228
2006	160,137.20	51,196	78,788	81,350	24.47	3,324
2007	5,709.50	1,697	2,612	3,098	24.83	125
2008	7,640.13	2,090	3,216	4,424	25.22	175
2009	66,155.35	16,473	25,351	40,804	25.63	1,592
2010	85,835.83	19,313	29,722	56,114	25.83	2,172
2011	80,156.71	15,999	24,622	55,535	26.07	2,130
2012	38,415.82	6,654	10,240	28,176	26.25	1,073
2013	2,979.47	436	671	2,308	26.27	88
2014	3,493.68	411	633	2,861	26.26	109

SUEZ WATER PENNSYLVANIA, INC.

ACCOUNT 320.1 WATER TREATMENT PLANT - STRUCTURES AND IMPROVEMENTS

CALCULATED REMAINING LIFE DEPRECIATION ACCRUAL
RELATED TO ORIGINAL COST AS OF DECEMBER 31, 2017

YEAR (1)	ORIGINAL COST (2)	CALCULATED ACCRUED (3)	ALLOC. BOOK RESERVE (4)	FUTURE BOOK ACCRUALS (5)	REM. LIFE (6)	ANNUAL ACCRUAL (7)
OTHER TREATMENT FACILITIES						
SURVIVOR CURVE.. IOWA 40-R1.5						
NET SALVAGE PERCENT.. 0						
2015	7,510.33	661	1,017	6,493	25.91	251
2016	16,095.96	908	1,397	14,699	25.10	586
2017	67,096.45	1,463	2,251	64,845	22.49	2,883
	892,814.19	339,081	477,293	415,521		17,133
	37,509,056.38	10,025,961	13,170,470	24,338,586		894,510
COMPOSITE REMAINING LIFE AND ANNUAL ACCRUAL RATE, PERCENT ..					27.2	2.38

SUEZ WATER PENNSYLVANIA, INC.

ACCOUNT 320.2 WATER TREATMENT PLANT - PAINTING

CALCULATED REMAINING LIFE DEPRECIATION ACCRUAL
RELATED TO ORIGINAL COST AS OF DECEMBER 31, 2017

YEAR (1)	ORIGINAL COST (2)	CALCULATED ACCRUED (3)	ALLOC. BOOK RESERVE (4)	FUTURE BOOK ACCRUALS (5)	REM. LIFE (6)	ANNUAL ACCRUAL (7)
SURVIVOR CURVE.. 10-SQUARE						
NET SALVAGE PERCENT.. 0						
2002	44,639.80	44,640	44,640			
2004	1,505.51	1,506	1,506			
2011	82,942.78	53,913	55,698	27,245	3.50	7,784
2015	318,436.73	79,609	82,244	236,193	7.50	31,492
	447,524.82	179,668	184,088	263,437		39,276
COMPOSITE REMAINING LIFE AND ANNUAL ACCRUAL RATE, PERCENT ..						6.7 8.78

SUEZ WATER PENNSYLVANIA, INC.

ACCOUNT 320.3 WATER TREATMENT PLANT - CHEMICAL EQUIPMENT

CALCULATED REMAINING LIFE DEPRECIATION ACCRUAL
RELATED TO ORIGINAL COST AS OF DECEMBER 31, 2017

YEAR (1)	ORIGINAL COST (2)	CALCULATED ACCRUED (3)	ALLOC. BOOK RESERVE (4)	FUTURE BOOK ACCRUALS (5)	REM. LIFE (6)	ANNUAL ACCRUAL (7)
SURVIVOR CURVE.. IOWA 25-S0.5						
NET SALVAGE PERCENT.. 0						
1939	100.00	100	100			
1951	57.00	57	57			
1954	289.60	290	290			
1955	23.27	23	23			
1958	119.48	119	119			
1963	821.89	822	822			
1964	729.96	730	730			
1967	1,487.95	1,488	1,488			
1968	706.80	707	707			
1971	583.00	569	76	507	1.12	453
1972	1,645.00	1,594	212	1,433	1.45	988
1973	261.05	251	33	228	1.80	127
1974	10,341.80	9,852	1,308	9,034	2.16	4,182
1975	7,361.17	6,945	922	6,439	2.55	2,525
1976	8,187.00	7,679	1,020	7,167	2.75	2,606
1977	100.00	93	12	88	3.17	28
1978	1,309.79	1,206	160	1,150	3.42	336
1979	3,584.00	3,270	434	3,150	3.70	851
1980	60,785.64	54,938	7,295	53,491	3.99	13,406
1981	1,114.00	996	132	982	4.32	227
1982	37,258.13	32,936	4,373	32,885	4.66	7,057
1983	4,316.00	3,767	500	3,816	5.03	759
1984	8,609.00	7,441	988	7,621	5.26	1,449
1985	24,745.04	21,152	2,809	21,936	5.52	3,974
1986	23,411.00	19,689	2,614	20,797	5.96	3,489
1987	34,676.97	28,768	3,820	30,857	6.26	4,929
1988	8,590.15	7,045	935	7,655	6.47	1,183
1989	15,476.70	12,484	1,658	13,819	6.83	2,023
1990	36,651.91	29,028	3,855	32,797	7.22	4,543
1991	4,461.00	3,476	462	3,999	7.51	532
1993	2,689.00	2,016	268	2,421	8.18	296
1994	19,070.00	14,028	1,863	17,207	8.45	2,036
1995	77,903.00	56,090	7,448	70,455	8.75	8,052
1996	25,167.00	17,640	2,342	22,825	9.17	2,489
1997	1,357,950.32	929,789	123,464	1,234,486	9.44	130,772
1998	9,109.28	6,058	804	8,305	9.82	846
1999	25,278.99	16,320	2,167	23,112	10.15	2,277
2000	44,782.27	27,980	3,715	41,067	10.51	3,907
2001	17,646.60	10,657	1,415	16,232	10.82	1,500
2002	106,650.16	61,825	8,210	98,440	11.24	8,758
2003	9,525.83	5,304	704	8,822	11.54	764
2004	31,665.43	16,802	2,231	29,434	11.94	2,465
2005	647,807.25	326,365	43,338	604,469	12.31	49,104

SUEZ WATER PENNSYLVANIA, INC.

ACCOUNT 320.3 WATER TREATMENT PLANT - CHEMICAL EQUIPMENT

CALCULATED REMAINING LIFE DEPRECIATION ACCRUAL
RELATED TO ORIGINAL COST AS OF DECEMBER 31, 2017

YEAR (1)	ORIGINAL COST (2)	CALCULATED ACCRUED (3)	ALLOC. BOOK RESERVE (4)	FUTURE BOOK ACCRUALS (5)	REM. LIFE (6)	ANNUAL ACCRUAL (7)
SURVIVOR CURVE.. IOWA 25-S0.5						
NET SALVAGE PERCENT.. 0						
2006	679,343.78	322,688	42,849	636,495	12.71	50,078
2007	151,330.08	67,372	8,946	142,384	13.08	10,886
2008	19,761.08	8,185	1,087	18,674	13.44	1,389
2009	293,323.90	111,463	14,801	278,523	13.87	20,081
2010	409,822.94	141,389	18,775	391,048	14.24	27,461
2011	143,889.73	44,232	5,874	138,016	14.64	9,427
2012	37,494.31	10,022	1,331	36,163	15.08	2,398
2013	11,498.90	2,592	344	11,155	15.46	722
2014	102,715.61	18,550	2,463	100,253	15.88	6,313
2015	19,858.65	2,641	351	19,508	16.30	1,197
2016	1,900,716.79	156,809	20,822	1,879,895	16.68	112,704
2017	121,126.78	3,464	460	120,667	16.98	7,106
	6,563,931.98	2,637,796	354,026	6,209,906		518,695
COMPOSITE REMAINING LIFE AND ANNUAL ACCRUAL RATE, PERCENT ...						12.0 7.90

SUEZ WATER PENNSYLVANIA, INC.

ACCOUNT 330 DISTRIBUTION RESERVOIRS AND STANDPIPES

CALCULATED REMAINING LIFE DEPRECIATION ACCRUAL
RELATED TO ORIGINAL COST AS OF DECEMBER 31, 2017

YEAR (1)	ORIGINAL COST (2)	CALCULATED ACCRUED (3)	ALLOC. BOOK RESERVE (4)	FUTURE BOOK ACCRUALS (5)	REM. LIFE (6)	ANNUAL ACCRUAL (7)
SURVIVOR CURVE.. IOWA 45-R1.5						
NET SALVAGE PERCENT.. 0						
1891	905.89	906	906			
1900	2,308.00	2,308	2,308			
1925	1,280.44	1,280	1,280			
1926	123.18	123	123			
1928	1,300.65	1,301	1,301			
1931	1,318.79	1,300	1,319			
1933	56.33	55	56			
1936	9,959.46	9,659	9,959			
1941	7,134.73	6,768	7,135			
1942	413.04	393	413			
1943	693.77	656	693	1	4.24	
1952	1,602.77	1,459	1,541	62	6.45	10
1954	0.23					
1955	698.90	625	660	39	7.43	5
1957	142.34	126	133	9	7.99	1
1960	3,051.83	2,650	2,798	254	8.73	29
1961	42,857.32	36,806	38,864	3,993	9.29	430
1962	1,839.47	1,572	1,660	179	9.44	19
1963	50,699.61	43,105	45,515	5,185	9.60	540
1965	2,000.00	1,670	1,763	237	10.39	23
1967	23,133.94	19,044	20,109	3,025	10.85	279
1968	1,697.55	1,378	1,455	243	11.48	21
1969	44,982.74	36,216	38,241	6,742	11.74	574
1970	3,115.97	2,487	2,626	490	12.02	41
1972	4,658.00	3,645	3,849	809	12.64	64
1973	27,956.37	21,521	22,724	5,232	13.31	393
1974	21,759.00	16,563	17,489	4,270	13.65	313
1975	8,968.00	6,746	7,123	1,845	14.00	132
1976	9,830.00	7,302	7,710	2,120	14.37	148
1977	620.14	455	480	140	14.75	9
1979	702.00	500	528	174	15.56	11
1980	53,955.00	37,833	39,949	14,006	15.98	876
1982	96,138.00	64,845	68,471	27,667	17.13	1,615
1983	14,072.00	9,321	9,842	4,230	17.58	241
1984	138,839.50	90,232	95,278	43,562	18.05	2,413
1985	253,636.33	162,378	171,458	82,178	18.26	4,500
1986	139,070.66	87,169	92,044	47,027	18.75	2,508
1987	18,742.00	11,489	12,131	6,611	19.25	343
1988	241,835.53	144,811	152,909	88,927	19.76	4,500
1989	92,704.09	54,158	57,187	35,517	20.28	1,751
1990	294,667.64	167,725	177,104	117,564	20.81	5,649
1991	412,365.00	228,368	241,139	171,226	21.35	8,020
1992	109,258.00	59,065	62,368	46,890	21.67	2,164

SUEZ WATER PENNSYLVANIA, INC.

ACCOUNT 330 DISTRIBUTION RESERVOIRS AND STANDPIPES

CALCULATED REMAINING LIFE DEPRECIATION ACCRUAL
RELATED TO ORIGINAL COST AS OF DECEMBER 31, 2017

YEAR (1)	ORIGINAL COST (2)	CALCULATED ACCRUED (3)	ALLOC. BOOK RESERVE (4)	FUTURE BOOK ACCRUALS (5)	REM. LIFE (6)	ANNUAL ACCRUAL (7)
SURVIVOR CURVE.. IOWA 45-R1.5						
NET SALVAGE PERCENT.. 0						
1993	89,926.00	47,148	49,785	40,141	22.23	1,806
1994	195,299.00	99,134	104,678	90,621	22.80	3,975
1995	126,799.00	62,487	65,981	60,818	23.16	2,626
1996	70,219.00	33,368	35,234	34,985	23.75	1,473
1997	53,749.18	24,682	26,062	27,687	24.14	1,147
1998	167,542.00	73,836	77,965	89,577	24.75	3,619
2000	239,955.35	97,422	102,870	137,085	25.60	5,355
2001	64,503.91	25,015	26,414	38,090	26.05	1,462
2002	91,261.91	33,667	35,550	55,712	26.52	2,101
2003	14,639.27	5,115	5,401	9,238	27.00	342
2004	428,526.15	141,756	149,683	278,843	27.31	10,210
2005	10,128.69	3,140	3,316	6,813	27.82	245
2006	261,459.50	75,771	80,008	181,452	28.18	6,439
2007	20,734.74	5,594	5,907	14,828	28.41	522
2008	38,482.58	9,544	10,078	28,405	28.81	986
2009	1,825,229.42	412,684	435,761	1,389,468	29.09	47,764
2010	3,119,927.76	636,465	672,057	2,447,871	29.26	83,659
2011	66,031.00	11,932	12,599	53,432	29.47	1,813
2014	3,612.19	384	405	3,207	29.39	109
2015	259,996.76	20,670	21,826	238,171	28.95	8,227
2016	182,845.20	9,289	9,809	173,036	28.00	6,180
2017	334,902.11	6,564	6,931	327,971	25.07	13,082
	9,806,864.93	3,181,680	3,358,961	6,447,904		240,764

COMPOSITE REMAINING LIFE AND ANNUAL ACCRUAL RATE, PERCENT . . 26.8 2.46

SUEZ WATER PENNSYLVANIA, INC.

ACCOUNT 331 TRANSMISSION AND DISTRIBUTION MAINS

CALCULATED REMAINING LIFE DEPRECIATION ACCRUAL
RELATED TO ORIGINAL COST AS OF DECEMBER 31, 2017

YEAR (1)	ORIGINAL COST (2)	CALCULATED ACCRUED (3)	ALLOC. BOOK RESERVE (4)	FUTURE BOOK ACCRUALS (5)	REM. LIFE (6)	ANNUAL ACCRUAL (7)
SURVIVOR CURVE.. IOWA 80-R3						
NET SALVAGE PERCENT.. 0						
1859	11.26	11	11			
1860	656.54	657	657			
1866	102.24	102	102			
1867	199.47	199	199			
1868	98.95	99	99			
1874	0.43					
1878	0.25					
1880	301.38	301	301			
1882	359.96	341	171	189	7.36	26
1883	328.73	327	164	165	0.64	165
1885	0.80	1	1			
1886	75.11	75	75			
1887	35.60	35	18	18	1.08	17
1888	201.93	199	100	102	2.08	49
1889	3,255.03	3,221	1,612	1,643	1.38	1,191
1890	1,527.81	1,500	751	777	2.36	329
1891	418.86	413	207	212	1.71	124
1892	551.10	539	270	281	2.71	104
1893	2,490.14	2,449	1,225	1,265	2.08	608
1894	2,305.42	2,249	1,125	1,180	3.09	382
1895	4,675.13	4,582	2,293	2,382	2.50	953
1896	1,133.34	1,102	551	582	3.50	166
1897	1,107.28	1,081	541	566	2.96	191
1898	233.07	226	113	120	3.95	30
1899	2,111.16	2,051	1,026	1,085	3.45	314
1900	61,364.20	59,124	29,582	31,782	4.45	7,142
1901	15,442.06	14,932	7,471	7,971	3.98	2,003
1902	210.80	202	101	110	4.99	22
1903	110.39	106	53	57	4.55	13
1904	5.45	5	5			
1905	759.78	727	364	396	5.15	77
1906	4,116.65	3,902	1,952	2,165	6.14	353
1907	8.75	8	4	5	5.78	1
1908	64,817.35	61,038	30,539	34,278	6.78	5,056
1909	44,424.55	41,937	20,983	23,442	6.44	3,640
1910	3,827.75	3,621	1,812	2,016	6.14	328
1911	407.80	382	191	217	7.14	30
1912	20,077.99	18,853	9,433	10,645	6.85	1,554
1913	1,017.98	947	474	544	7.87	69
1914	24,042.51	22,396	11,206	12,837	7.61	1,687
1915	2,581.06	2,408	1,205	1,376	7.38	186
1916	1,239.42	1,145	573	666	8.40	79
1917	613.84	568	284	330	8.20	40

SUEZ WATER PENNSYLVANIA, INC.

ACCOUNT 331 TRANSMISSION AND DISTRIBUTION MAINS

CALCULATED REMAINING LIFE DEPRECIATION ACCRUAL
RELATED TO ORIGINAL COST AS OF DECEMBER 31, 2017

YEAR (1)	ORIGINAL COST (2)	CALCULATED ACCRUED (3)	ALLOC. BOOK RESERVE (4)	FUTURE BOOK ACCRUALS (5)	REM. LIFE (6)	ANNUAL ACCRUAL (7)
SURVIVOR CURVE.. IOWA 80-R3						
NET SALVAGE PERCENT.. 0						
1918	99.20	92	46	53	8.02	7
1919	906.18	830	415	491	9.03	54
1920	3,525.70	3,231	1,617	1,909	8.88	215
1921	1,335.87	1,212	606	730	9.88	74
1922	1,478.60	1,341	671	808	9.77	83
1923	1,047.60	950	475	573	9.67	59
1924	2,416.14	2,169	1,085	1,331	10.67	125
1925	7,943.53	7,127	3,566	4,378	10.60	413
1926	1,183.21	1,061	531	652	10.54	62
1927	18,231.39	16,169	8,090	10,141	11.54	879
1928	15,401.93	13,646	6,828	8,574	11.52	744
1929	11,881.63	10,515	5,261	6,621	11.50	576
1930	10,118.29	8,854	4,430	5,688	12.50	455
1931	3,446.15	3,011	1,507	1,939	12.51	155
1932	1,451.65	1,266	633	819	12.54	65
1933	3,636.85	3,135	1,569	2,068	13.54	153
1934	4,503.92	3,873	1,938	2,566	13.59	189
1935	5,972.86	5,125	2,564	3,409	13.65	250
1936	5,296.96	4,490	2,247	3,050	14.65	208
1937	11,977.73	10,124	5,065	6,913	14.74	469
1938	10,407.55	8,770	4,388	6,020	14.84	406
1939	20,053.25	16,686	8,349	11,704	15.84	739
1940	4,780.13	3,964	1,983	2,797	15.96	175
1941	11,120.34	9,188	4,597	6,523	16.09	405
1942	13,884.55	11,321	5,664	8,221	17.09	481
1943	1,817.88	1,476	738	1,080	17.25	63
1944	8,957.00	7,176	3,590	5,367	18.24	294
1945	5,315.17	4,239	2,121	3,194	18.41	173
1946	21,098.72	16,744	8,378	12,721	18.59	684
1947	30,210.27	23,643	11,829	18,381	19.59	938
1948	54,702.35	42,580	21,304	33,398	19.79	1,688
1949	759.17	582	291	468	20.79	23
1950	22,637.51	17,268	8,640	13,998	20.99	667
1951	31,604.03	23,959	11,988	19,616	21.22	924
1952	54,366.90	40,596	20,312	34,055	22.22	1,533
1953	23,476.21	17,415	8,713	14,763	22.45	658
1954	9,800.55	7,156	3,580	6,221	23.46	265
1955	2,784.81	2,019	1,010	1,775	23.71	75
1956	46,878.55	33,734	16,878	30,001	23.97	1,252
1957	37,788.32	26,747	13,382	24,406	24.97	977
1958	105,875.74	74,335	37,192	68,684	25.25	2,720
1959	234,156.31	161,638	80,873	153,283	26.25	5,839
1960	298,719.51	204,384	102,260	196,460	26.54	7,402

SUEZ WATER PENNSYLVANIA, INC.

ACCOUNT 331 TRANSMISSION AND DISTRIBUTION MAINS

CALCULATED REMAINING LIFE DEPRECIATION ACCRUAL
RELATED TO ORIGINAL COST AS OF DECEMBER 31, 2017

YEAR (1)	ORIGINAL COST (2)	CALCULATED ACCRUED (3)	ALLOC. BOOK RESERVE (4)	FUTURE BOOK ACCRUALS (5)	REM. LIFE (6)	ANNUAL ACCRUAL (7)
SURVIVOR CURVE.. IOWA 80-R3						
NET SALVAGE PERCENT.. 0						
1961	194,850.99	131,018	65,553	129,298	27.53	4,697
1962	112,494.03	74,921	37,486	75,008	27.83	2,695
1963	266,722.71	174,437	87,277	179,446	28.83	6,224
1964	536,744.36	347,488	173,860	362,884	29.14	12,453
1965	56,955.21	36,178	18,101	38,854	30.15	1,289
1966	264,124.98	165,950	83,031	181,094	30.47	5,943
1967	229,115.53	142,327	71,211	157,905	30.80	5,127
1968	201,252.86	122,523	61,303	139,950	31.80	4,401
1969	354,856.45	213,411	106,777	248,079	32.15	7,716
1970	546,084.08	321,644	160,930	385,154	33.15	11,619
1971	354,705.03	206,155	103,147	251,558	33.50	7,509
1972	393,974.14	224,092	112,121	281,853	34.50	8,170
1973	761,481.59	426,963	213,624	547,858	34.87	15,711
1974	462,368.72	253,424	126,797	335,572	35.87	9,355
1975	736,352.22	397,483	198,875	537,477	36.24	14,831
1976	349,679.00	184,281	92,202	257,477	37.24	6,914
1977	584,518.36	303,014	151,608	432,910	37.62	11,507
1978	1,223,769.08	618,738	309,576	914,193	38.62	23,671
1979	489,100.80	242,887	121,525	367,576	39.02	9,420
1980	616,190.02	298,113	149,156	467,034	40.02	11,670
1981	437,145.47	205,808	102,973	334,172	41.02	8,147
1982	640,161.65	295,435	147,816	492,346	41.42	11,887
1983	472,235.89	211,798	105,970	366,266	42.42	8,634
1984	868,026.30	380,890	190,573	677,453	42.84	15,814
1985	1,633,235.45	695,432	347,949	1,285,286	43.83	29,324
1986	930,221.57	386,786	193,523	736,699	44.26	16,645
1987	2,981,859.11	1,200,496	600,650	2,381,209	45.26	52,612
1988	2,112,584.33	828,978	414,767	1,697,817	45.68	37,168
1989	2,228,444.17	844,580	422,573	1,805,871	46.69	38,678
1990	2,140,484.43	788,769	394,649	1,745,835	47.13	37,043
1991	2,234,570.59	793,496	397,014	1,837,557	48.13	38,179
1992	969,377.94	331,236	165,729	803,649	49.13	16,358
1993	1,670,642.00	552,648	276,509	1,394,133	49.57	28,125
1994	2,563,071.00	813,006	406,775	2,156,296	50.58	42,631
1995	1,760,993.20	538,864	269,612	1,491,381	51.03	29,226
1996	1,330,515.00	389,043	194,652	1,135,863	52.03	21,831
1997	3,255,849.29	907,731	454,169	2,801,680	53.03	52,832
1998	3,088,738.36	825,311	412,932	2,675,806	53.49	50,024
1999	2,802,267.16	710,094	355,285	2,446,982	54.50	44,899
2000	4,203,610.88	1,015,172	507,926	3,695,685	54.96	67,243
2001	3,465,470.11	789,088	394,808	3,070,662	55.96	54,872
2002	1,990,873.15	425,848	213,067	1,777,806	56.96	31,211
2003	4,232,072.76	853,186	426,879	3,805,194	57.44	66,246

SUEZ WATER PENNSYLVANIA, INC.

ACCOUNT 331 TRANSMISSION AND DISTRIBUTION MAINS

CALCULATED REMAINING LIFE DEPRECIATION ACCRUAL
RELATED TO ORIGINAL COST AS OF DECEMBER 31, 2017

YEAR (1)	ORIGINAL COST (2)	CALCULATED ACCRUED (3)	ALLOC. BOOK RESERVE (4)	FUTURE BOOK ACCRUALS (5)	REM. LIFE (6)	ANNUAL ACCRUAL (7)
SURVIVOR CURVE.. IOWA 80-R3						
NET SALVAGE PERCENT.. 0						
2004	2,544,259.32	477,303	238,811	2,305,448	58.45	39,443
2005	3,342,379.24	584,916	292,654	3,049,725	58.93	51,752
2006	5,749,653.95	925,694	463,157	5,286,497	59.93	88,211
2007	3,863,894.48	567,992	284,186	3,579,708	60.93	58,751
2008	6,134,569.83	822,032	411,291	5,723,279	61.42	93,183
2009	4,534,645.35	543,251	271,808	4,262,837	62.43	68,282
2010	5,482,258.59	583,861	292,126	5,190,133	62.92	82,488
2011	5,952,646.18	549,429	274,898	5,677,748	63.92	88,826
2012	6,040,461.77	474,780	237,549	5,802,913	64.43	90,065
2013	2,369,631.21	152,604	76,353	2,293,278	65.43	35,049
2014	8,370,242.08	421,860	211,072	8,159,170	65.94	123,736
2015	6,685,748.87	242,024	121,093	6,564,656	66.47	98,761
2016	9,412,796.39	206,140	103,139	9,309,657	66.99	138,971
2017	14,962,686.27	110,724	55,399	14,907,287	66.62	223,766
	143,623,963.03	27,439,254	13,729,544	129,894,419		2,322,380
COMPOSITE REMAINING LIFE AND ANNUAL ACCRUAL RATE, PERCENT ..						55.9 1.62

SUEZ WATER PENNSYLVANIA, INC.

ACCOUNT 333 SERVICES

CALCULATED REMAINING LIFE DEPRECIATION ACCRUAL
RELATED TO ORIGINAL COST AS OF DECEMBER 31, 2017

YEAR (1)	ORIGINAL COST (2)	CALCULATED ACCRUED (3)	ALLOC. BOOK RESERVE (4)	FUTURE BOOK ACCRUALS (5)	REM. LIFE (6)	ANNUAL ACCRUAL (7)
SURVIVOR CURVE.. IOWA 60-S2.5						
NET SALVAGE PERCENT.. 0						
1921	27.57	26	26	2	4.51	
1922	902.05	861	861	41	4.50	9
1923	303.19	289	289	14	4.51	3
1924	238.62	228	228	11	4.54	2
1925	978.12	932	932	46	4.58	10
1927	126.48	119	119	7	5.65	1
1928	91.58	86	86	6	5.73	1
1930	85.23	80	80	5	5.96	1
1931	40.15	38	38	2	6.09	
1932	118.41	110	110	8	6.24	1
1933	94.27	88	88	6	6.41	1
1934	131.30	122	122	9	6.59	1
1935	755.30	698	698	57	6.79	8
1936	358.57	330	330	29	6.99	4
1937	3.47	3	3			
1938	48.75	45	45	4	7.46	1
1939	237.59	216	216	22	7.71	3
1940	3,688.87	3,345	3,344	345	7.97	43
1941	471.49	426	426	45	8.25	5
1943	36.54	33	33	4	8.15	
1944	1,032.67	926	926	107	8.47	13
1946	226.65	201	201	26	9.15	3
1947	1,095.20	965	965	130	9.50	14
1948	11,660.76	10,211	10,209	1,452	9.87	147
1949	18,747.20	16,438	16,435	2,312	9.62	240
1950	9,029.15	7,863	7,861	1,168	10.02	117
1951	16,129.08	13,944	13,941	2,188	10.42	210
1953	29,282.47	25,119	25,114	4,168	10.69	390
1955	35,334.69	29,815	29,809	5,526	11.57	478
1956	31,214.49	26,108	26,103	5,111	12.03	425
1957	32,166.71	26,856	26,851	5,316	11.96	444
1958	29,420.56	24,331	24,326	5,095	12.45	409
1959	44,213.55	36,211	36,204	8,010	12.93	619
1960	44,234.02	36,117	36,110	8,124	12.92	629
1961	51,037.78	41,239	41,231	9,807	13.43	730
1962	51,112.23	40,849	40,841	10,271	13.94	737
1963	47,635.41	37,903	37,895	9,740	13.99	696
1964	17,948.49	14,115	14,112	3,836	14.53	264
1965	40,581.94	31,532	31,526	9,056	15.07	601
1966	44,469.35	34,353	34,346	10,123	15.17	667
1967	41,806.29	31,881	31,875	9,931	15.72	632
1968	26,693.69	20,084	20,080	6,614	16.29	406
1969	20,560.97	15,357	15,354	5,207	16.44	317

SUEZ WATER PENNSYLVANIA, INC.

ACCOUNT 333 SERVICES

CALCULATED REMAINING LIFE DEPRECIATION ACCRUAL
RELATED TO ORIGINAL COST AS OF DECEMBER 31, 2017

YEAR (1)	ORIGINAL COST (2)	CALCULATED ACCRUED (3)	ALLOC. BOOK RESERVE (4)	FUTURE BOOK ACCRUALS (5)	REM. LIFE (6)	ANNUAL ACCRUAL (7)
SURVIVOR CURVE.. IOWA 60-S2.5						
NET SALVAGE PERCENT.. 0						
1970	38,512.61	28,353	28,347	10,166	17.02	597
1971	72,283.35	52,434	52,424	19,859	17.60	1,128
1972	99,089.67	70,790	70,776	28,314	18.19	1,557
1973	142,154.55	100,589	100,569	41,586	18.39	2,261
1974	142,539.51	99,207	99,187	43,353	19.00	2,282
1975	114,913.50	78,624	78,608	36,306	19.61	1,851
1976	112,439.13	75,593	75,578	36,861	20.23	1,822
1977	149,947.06	99,595	99,575	50,372	20.48	2,460
1978	223,866.09	145,916	145,887	77,979	21.10	3,696
1979	224,415.34	143,424	143,395	81,020	21.74	3,727
1980	71,027.78	44,478	44,469	26,559	22.38	1,187
1981	158,107.33	96,951	96,932	61,175	23.02	2,657
1982	153,546.50	92,128	92,110	61,436	23.67	2,596
1983	180,643.55	105,947	105,926	74,718	24.32	3,072
1984	198,444.80	113,669	113,646	84,799	24.98	3,395
1985	359,820.85	201,140	201,100	158,721	25.64	6,190
1986	349,397.62	190,422	190,384	159,014	26.30	6,046
1987	590,229.87	313,235	313,173	277,057	26.97	10,273
1988	600,406.47	309,930	309,868	290,538	27.65	10,508
1989	466,056.37	233,774	233,728	232,328	28.32	8,204
1990	525,722.80	255,922	255,871	269,852	28.99	9,308
1991	547,345.00	256,705	256,654	290,691	30.00	9,690
1992	488,179.00	221,584	221,540	266,639	30.68	8,691
1993	623,967.00	273,672	273,618	350,349	31.36	11,172
1994	727,110.00	305,822	305,761	421,349	32.37	13,017
1995	674,616.00	273,219	273,165	401,451	33.06	12,143
1996	570,663.67	220,847	220,803	349,861	34.06	10,272
1997	536,103.05	198,894	198,854	337,249	34.75	9,705
1998	874,066.76	308,546	308,485	565,582	35.75	15,820
1999	932,253.47	313,890	313,828	618,425	36.45	16,966
2000	1,427,323.53	454,603	454,513	972,811	37.45	25,976
2001	1,205,385.06	361,977	361,905	843,480	38.45	21,937
2002	869,891.79	246,701	246,652	623,240	39.15	15,919
2003	830,745.71	220,480	220,436	610,310	40.14	15,205
2004	798,308.82	197,182	197,143	601,166	41.15	14,609
2005	633,657.04	144,981	144,952	488,705	42.14	11,597
2006	1,005,260.21	211,507	211,465	793,795	43.15	18,396
2007	1,387,703.53	268,104	268,051	1,119,653	43.85	25,534
2008	1,883,036.61	329,155	329,089	1,553,948	44.85	34,648
2009	1,302,459.85	203,705	203,664	1,098,796	45.85	23,965
2010	1,541,025.62	212,662	212,620	1,328,406	46.85	28,354
2011	1,622,338.56	194,032	193,993	1,428,346	47.85	29,850
2012	1,142,684.07	115,640	115,617	1,027,067	48.85	21,025

SUEZ WATER PENNSYLVANIA, INC.

ACCOUNT 333 SERVICES

CALCULATED REMAINING LIFE DEPRECIATION ACCRUAL
RELATED TO ORIGINAL COST AS OF DECEMBER 31, 2017

YEAR (1)	ORIGINAL COST (2)	CALCULATED ACCRUED (3)	ALLOC. BOOK RESERVE (4)	FUTURE BOOK ACCRUALS (5)	REM. LIFE (6)	ANNUAL ACCRUAL (7)
SURVIVOR CURVE.. IOWA 60-S2.5						
NET SALVAGE PERCENT.. 0						
2013	1,216,634.06	100,737	100,717	1,115,917	49.85	22,385
2014	2,300,462.76	148,150	148,120	2,152,343	50.85	42,327
2015	1,702,695.06	78,324	78,309	1,624,386	51.85	31,329
2016	2,875,712.20	79,370	79,354	2,796,358	52.85	52,911
2017	3,850,566.31	35,425	35,418	3,815,148	53.85	70,848
	39,198,130.39	9,358,528	9,356,668	29,841,462		708,390
COMPOSITE REMAINING LIFE AND ANNUAL ACCRUAL RATE, PERCENT ..					42.1	1.81

SUEZ WATER PENNSYLVANIA, INC.

ACCOUNT 334 METERS

CALCULATED REMAINING LIFE DEPRECIATION ACCRUAL
RELATED TO ORIGINAL COST AS OF DECEMBER 31, 2017

YEAR (1)	ORIGINAL COST (2)	CALCULATED ACCRUED (3)	ALLOC. BOOK RESERVE (4)	FUTURE BOOK ACCRUALS (5)	REM. LIFE (6)	ANNUAL ACCRUAL (7)
SURVIVOR CURVE.. IOWA 25-S1.5						
NET SALVAGE PERCENT.. 0						
1997	30,332.56	21,827	21,036	9,297	7.99	1,164
1998	296,707.34	207,695	200,169	96,538	8.36	11,548
1999	323,826.62	219,263	211,318	112,509	8.82	12,756
2000	573,354.50	375,261	361,663	211,692	9.24	22,910
2001	351,259.75	221,399	213,376	137,884	9.68	14,244
2002	426,200.47	258,277	248,918	177,282	10.08	17,588
2003	302,039.70	174,760	168,427	133,613	10.56	12,653
2004	427,790.08	235,028	226,512	201,278	11.07	18,182
2005	253,431.76	131,480	126,716	126,716	11.60	10,924
2006	562,612.23	273,655	263,739	298,873	12.14	24,619
2007	1,356,232.45	612,339	590,151	766,081	12.76	60,038
2008	563,463.90	234,457	225,961	337,503	13.33	25,319
2009	318,267.00	120,369	116,007	202,260	13.97	14,478
2010	819,622.00	277,852	267,784	551,838	14.62	37,745
2011	1,063,179.00	316,508	305,039	758,140	15.33	49,455
2012	1,504,590.97	383,972	370,059	1,134,532	16.05	70,687
2013	2,185,747.63	461,193	444,481	1,741,267	16.82	103,524
2014	2,108,328.44	349,139	336,488	1,771,840	17.64	100,444
2015	3,077,453.15	366,832	353,540	2,723,913	18.47	147,478
2016	1,103,532.88	79,454	76,575	1,026,958	19.33	53,128
2017	1,187,267.00	28,613	27,576	1,159,691	20.25	57,269
	18,835,239.43	5,349,373	5,155,535	13,679,704		866,153
COMPOSITE REMAINING LIFE AND ANNUAL ACCRUAL RATE, PERCENT ..						15.8 4.60

SUEZ WATER PENNSYLVANIA, INC.

ACCOUNT 335 HYDRANTS

CALCULATED REMAINING LIFE DEPRECIATION ACCRUAL
RELATED TO ORIGINAL COST AS OF DECEMBER 31, 2017

YEAR (1)	ORIGINAL COST (2)	CALCULATED ACCRUED (3)	ALLOC. BOOK RESERVE (4)	FUTURE BOOK ACCRUALS (5)	REM. LIFE (6)	ANNUAL ACCRUAL (7)
SURVIVOR CURVE.. IOWA 60-R4						
NET SALVAGE PERCENT.. 0						
1957	4,155.80	3,671	3,909	247	7.99	31
1958	10,362.71	9,063	9,650	713	8.53	84
1959	10,127.91	8,769	9,337	791	9.07	87
1960	13,034.18	11,168	11,891	1,143	9.61	119
1961	15,344.48	13,092	13,940	1,404	9.72	144
1962	10,566.95	8,914	9,491	1,076	10.29	105
1963	5,689.93	4,744	5,051	639	10.86	59
1964	28,557.72	23,529	25,053	3,505	11.44	306
1965	8,127.01	6,614	7,042	1,085	12.01	90
1966	17,685.16	14,208	15,128	2,557	12.60	203
1967	19,888.01	15,767	16,788	3,100	13.20	235
1968	15,059.74	11,704	12,462	2,598	14.19	183
1969	34,073.00	26,110	27,801	6,272	14.79	424
1970	29,293.58	22,123	23,556	5,738	15.40	373
1971	20,524.75	15,270	16,259	4,266	16.00	267
1972	23,800.62	17,436	18,565	5,236	16.61	315
1973	77,893.78	56,154	59,791	18,103	17.23	1,051
1974	52,256.20	37,050	39,449	12,807	17.85	717
1975	46,048.73	32,096	34,175	11,874	18.48	643
1976	69,865.51	47,550	50,630	19,236	19.48	987
1977	52,284.71	34,937	37,200	15,085	20.11	750
1978	83,651.15	54,850	58,402	25,249	20.74	1,217
1979	62,314.79	40,068	42,663	19,652	21.38	919
1980	50,952.00	31,906	33,972	16,980	22.38	759
1981	59,846.68	36,698	39,075	20,772	23.02	902
1982	43,763.20	26,258	27,959	15,804	23.67	668
1983	43,613.54	25,427	27,074	16,540	24.67	670
1984	62,858.06	35,798	38,116	24,742	25.32	977
1985	73,676.00	40,706	43,342	30,334	26.32	1,153
1986	120,470.00	64,885	69,087	51,383	26.98	1,904
1987	159,822.00	83,363	88,762	71,060	27.98	2,540
1988	142,561.19	72,336	77,021	65,540	28.64	2,288
1989	141,562.91	69,394	73,888	67,675	29.64	2,283
1990	154,064.00	73,304	78,051	76,013	30.30	2,509
1991	110,657.00	50,725	54,010	56,647	31.31	1,809
1992	80,456.00	35,497	37,796	42,660	32.30	1,321
1993	110,269.00	47,008	50,052	60,217	32.97	1,826
1994	124,333.00	50,840	54,133	70,200	33.97	2,067
1995	125,317.00	49,062	52,239	73,078	34.97	2,090
1996	118,025.00	44,401	47,277	70,748	35.65	1,985
1997	147,862.35	53,053	56,489	91,373	36.64	2,494
1998	154,264.67	52,635	56,044	98,221	37.65	2,609
1999	255,444.13	82,713	88,070	167,374	38.64	4,332

SUEZ WATER PENNSYLVANIA, INC.

ACCOUNT 335 HYDRANTS

CALCULATED REMAINING LIFE DEPRECIATION ACCRUAL
RELATED TO ORIGINAL COST AS OF DECEMBER 31, 2017

YEAR (1)	ORIGINAL COST (2)	CALCULATED ACCRUED (3)	ALLOC. BOOK RESERVE (4)	FUTURE BOOK ACCRUALS (5)	REM. LIFE (6)	ANNUAL ACCRUAL (7)
SURVIVOR CURVE.. IOWA 60-R4						
NET SALVAGE PERCENT.. 0						
2000	212,166.26	65,347	69,579	142,587	39.32	3,626
2001	217,958.32	63,295	67,394	150,564	40.32	3,734
2002	171,530.78	46,794	49,825	121,706	41.32	2,945
2003	200,690.68	51,216	54,533	146,158	42.32	3,454
2004	348,781.45	82,870	88,237	260,544	43.32	6,014
2005	184,089.45	40,500	43,123	140,966	44.32	3,181
2006	263,185.04	53,269	56,719	206,466	45.32	4,556
2007	131,985.81	24,391	25,971	106,015	46.32	2,289
2008	271,858.81	45,727	48,688	223,171	46.99	4,749
2009	289,059.80	43,475	46,290	242,770	48.00	5,058
2010	74,133.84	9,845	10,483	63,651	48.99	1,299
2011	252,612.86	29,050	30,931	221,682	50.00	4,434
2012	155,853.91	15,180	16,163	139,691	50.99	2,740
2013	173,315.86	13,796	14,689	158,627	52.00	3,051
2014	369,311.46	22,897	24,380	344,931	52.99	6,509
2015	180,991.25	8,000	8,518	172,473	54.00	3,194
2016	890,681.10	23,692	25,227	865,454	54.99	15,738
2017	317,815.59	2,797	2,978	314,838	56.00	5,622
	7,696,446.42	2,183,037	2,324,418	5,372,028		128,688
COMPOSITE REMAINING LIFE AND ANNUAL ACCRUAL RATE, PERCENT ..						41.7 1.67

SUEZ WATER PENNSYLVANIA, INC.

ACCOUNT 339 OTHER PLANT AND MISCELLANEOUS EQUIPMENT

CALCULATED REMAINING LIFE DEPRECIATION ACCRUAL
RELATED TO ORIGINAL COST AS OF DECEMBER 31, 2017

YEAR (1)	ORIGINAL COST (2)	CALCULATED ACCRUED (3)	ALLOC. BOOK RESERVE (4)	FUTURE BOOK ACCRUALS (5)	REM. LIFE (6)	ANNUAL ACCRUAL (7)
SURVIVOR CURVE.. IOWA 40-S2						
NET SALVAGE PERCENT.. 0						
1998	495,159.29	253,918	352,026	143,133	18.52	7,729
2002	8,243.48	3,475	4,818	3,425	21.26	161
2006	5,665.96	1,818	2,520	3,146	24.34	129
2007	10,176.78	2,992	4,148	6,029	25.21	239
2008	5,242.31	1,400	1,941	3,301	26.09	127
2009	13,242.00	3,174	4,400	8,842	26.96	328
2012	42.00	7	10	32	29.84	1
2014	949.29	94	130	819	31.71	26
2015	534.38	38	53	481	32.71	15
	539,255.49	266,916	370,046	169,209		8,755

COMPOSITE REMAINING LIFE AND ANNUAL ACCRUAL RATE, PERCENT .. 19.3 1.62

SUEZ WATER PENNSYLVANIA, INC.

ACCOUNT 340.1 OFFICE FURNITURE AND EQUIPMENT - COMPUTERS AND SOFTWARE

CALCULATED REMAINING LIFE DEPRECIATION ACCRUAL
RELATED TO ORIGINAL COST AS OF DECEMBER 31, 2017

YEAR (1)	ORIGINAL COST (2)	CALCULATED ACCRUED (3)	ALLOC. BOOK RESERVE (4)	FUTURE BOOK ACCRUALS (5)	REM. LIFE (6)	ANNUAL ACCRUAL (7)
SURVIVOR CURVE.. 5-SQUARE						
NET SALVAGE PERCENT.. 0						
1997	1,546.10	1,546	1,546			
1998	4,740.31	4,740	4,740			
1999	0.23					
2001	4,523.43	4,523	4,523			
2002	21,709.92	21,710	21,710			
2003	52,437.26	52,437	52,437			
2004	77,410.89	77,411	77,411			
2005	651,048.90	651,049	651,049			
2006	1,546.53	1,547	1,547			
2007	95,995.46	95,995	95,995			
2008	23,621.82	23,622	23,622			
2009	358,158.29	358,158	358,158			
2010	363,305.77	363,306	363,306			
2011	142,917.12	142,917	142,917			
2012	398,051.12	398,051	398,051			
2013	640,720.93	576,649	162,398	478,323	0.50	478,323
2014	218,590.38	153,013	43,092	175,498	1.50	116,999
2015	290,868.45	145,434	40,958	249,910	2.50	99,964
2016	108,253.60	32,476	9,146	99,108	3.50	28,317
2017	5,697.74	570	161	5,537	4.50	1,230
	3,461,144.25	3,105,154	2,452,767	1,008,377		724,833
COMPOSITE REMAINING LIFE AND ANNUAL ACCRUAL RATE, PERCENT .. 1.4						20.94

SUEZ WATER PENNSYLVANIA, INC.

ACCOUNT 340.11 SOFTWARE - LARGE

CALCULATED REMAINING LIFE DEPRECIATION ACCRUAL
RELATED TO ORIGINAL COST AS OF DECEMBER 31, 2017

YEAR (1)	ORIGINAL COST (2)	CALCULATED ACCRUED (3)	ALLOC. BOOK RESERVE (4)	FUTURE BOOK ACCRUALS (5)	REM. LIFE (6)	ANNUAL ACCRUAL (7)
SURVIVOR CURVE.. 8-SQUARE						
NET SALVAGE PERCENT.. 0						
2011	3,577,604.00	2,906,803	2,817,240	760,364	1.50	506,909
2012	87,975.00	60,483	58,619	29,356	2.50	11,742
	3,665,579.00	2,967,286	2,875,859	789,720		518,651
COMPOSITE REMAINING LIFE AND ANNUAL ACCRUAL RATE, PERCENT ..						1.5 14.15

SUEZ WATER PENNSYLVANIA, INC.

ACCOUNT 340.2 OFFICE FURNITURE AND EQUIPMENT - FURNITURE

CALCULATED REMAINING LIFE DEPRECIATION ACCRUAL
RELATED TO ORIGINAL COST AS OF DECEMBER 31, 2017

YEAR (1)	ORIGINAL COST (2)	CALCULATED ACCRUED (3)	ALLOC. BOOK RESERVE (4)	FUTURE BOOK ACCRUALS (5)	REM. LIFE (6)	ANNUAL ACCRUAL (7)
SURVIVOR CURVE.. 15-SQUARE						
NET SALVAGE PERCENT.. 0						
2012	69,239.46	25,388	54,237	15,002	9.50	1,579
2013	91,981.10	27,594	58,950	33,031	10.50	3,146
2014	25,432.74	5,934	12,677	12,756	11.50	1,109
2015	78,307.87	13,052	27,883	50,425	12.50	4,034
2016	394,170.94	39,417	84,208	309,963	13.50	22,960
2017	313.99	10	21	293	14.50	20
	659,446.10	111,395	237,976	421,470		32,848
COMPOSITE REMAINING LIFE AND ANNUAL ACCRUAL RATE, PERCENT ..						12.8 4.98

SUEZ WATER PENNSYLVANIA, INC.

ACCOUNT 341 TRANSPORTATION EQUIPMENT - TRUCKS

CALCULATED REMAINING LIFE DEPRECIATION ACCRUAL
RELATED TO ORIGINAL COST AS OF DECEMBER 31, 2017

YEAR (1)	ORIGINAL COST (2)	CALCULATED ACCRUED (3)	ALLOC. BOOK RESERVE (4)	FUTURE BOOK ACCRUALS (5)	REM. LIFE (6)	ANNUAL ACCRUAL (7)
SURVIVOR CURVE.. IOWA 7-L3						
NET SALVAGE PERCENT.. 0						
2015	1,057.45	417		1,057	3.85	275
	1,057.45	417		1,057		275
COMPOSITE REMAINING LIFE AND ANNUAL ACCRUAL RATE, PERCENT ..						3.8 26.01

SUEZ WATER PENNSYLVANIA, INC.

ACCOUNT 343.1 SHOP AND GARAGE EQUIPMENT

CALCULATED REMAINING LIFE DEPRECIATION ACCRUAL
RELATED TO ORIGINAL COST AS OF DECEMBER 31, 2017

YEAR (1)	ORIGINAL COST (2)	CALCULATED ACCRUED (3)	ALLOC. BOOK RESERVE (4)	FUTURE BOOK ACCRUALS (5)	REM. LIFE (6)	ANNUAL ACCRUAL (7)
SURVIVOR CURVE.. 20-SQUARE						
NET SALVAGE PERCENT.. 0						
2009	15,026.77	6,386	10,355	4,672	11.50	406
2010	202,534.12	75,950	123,159	79,375	12.50	6,350
2011	117,960.29	38,337	62,167	55,793	13.50	4,133
2012	91,515.86	25,167	40,810	50,706	14.50	3,497
2013	56,571.73	12,729	20,641	35,931	15.50	2,318
2014	44,556.49	7,797	12,643	31,913	16.50	1,934
2015	235,467.55	29,433	47,728	187,740	17.50	10,728
2017	6,796.31	170	276	6,520	19.50	334
	770,429.12	195,969	317,779	452,650		29,700

COMPOSITE REMAINING LIFE AND ANNUAL ACCRUAL RATE, PERCENT .. 15.2 3.85

SUEZ WATER PENNSYLVANIA, INC.

ACCOUNT 343.2 TOOLS AND WORK EQUIPMENT

CALCULATED REMAINING LIFE DEPRECIATION ACCRUAL
RELATED TO ORIGINAL COST AS OF DECEMBER 31, 2017

YEAR (1)	ORIGINAL COST (2)	CALCULATED ACCRUED (3)	ALLOC. BOOK RESERVE (4)	FUTURE BOOK ACCRUALS (5)	REM. LIFE (6)	ANNUAL ACCRUAL (7)
SURVIVOR CURVE.. 20-SQUARE						
NET SALVAGE PERCENT.. 0						
1984	230.94	231	231			
1985	15,258.46	15,258	15,258			
1986	317.95	318	318			
1987	17,615.89	17,616	17,616			
1988	5,163.92	5,164	5,164			
1989	3,762.04	3,762	3,762			
1990	14,555.65	14,556	14,556			
1991	32,091.00	32,091	32,091			
1992	238.72	239	239			
1993	25,081.00	25,081	25,081			
1994	5,235.00	5,235	5,235			
1995	5,966.43	5,966	5,966			
1996	91,022.00	91,022	91,022			
1997	15,718.06	15,718	15,718			
1998	18,091.90	17,640	15,680	2,412	0.50	2,412
1999	19,809.02	18,323	16,287	3,522	1.50	2,348
2000	53,752.16	47,033	41,808	11,944	2.50	4,778
2001	68,425.83	56,451	50,180	18,246	3.50	5,213
2002	6,229.70	4,828	4,292	1,938	4.50	431
2003	32,202.15	23,347	20,753	11,449	5.50	2,082
2004	25,375.57	17,129	15,226	10,150	6.50	1,562
2005	22,252.82	13,908	12,363	9,890	7.50	1,319
2006	81,045.92	46,601	41,424	39,622	8.50	4,661
2007	37,352.90	19,610	17,431	19,922	9.50	2,097
2008	20,599.96	9,785	8,698	11,902	10.50	1,134
2009	87,917.51	37,365	33,214	54,704	11.50	4,757
2010	81,808.70	30,678	27,270	54,539	12.50	4,363
2011	16,643.56	5,409	4,808	11,836	13.50	877
2012	6,874.79	1,891	1,681	5,194	14.50	358
2013	41,688.59	9,380	8,338	33,351	15.50	2,152
2014	414,116.79	72,470	64,419	349,698	16.50	21,194
2015	568,666.54	71,083	63,186	505,481	17.50	28,885
2016	84,012.51	6,301	5,601	78,412	18.50	4,238
2017	151,381.77	3,785	3,364	148,018	19.50	7,591
	2,070,505.75	745,274	688,280	1,382,226		102,452

COMPOSITE REMAINING LIFE AND ANNUAL ACCRUAL RATE, PERCENT .. 13.5 4.95

SUEZ WATER PENNSYLVANIA, INC.

ACCOUNT 344 LABORATORY EQUIPMENT

CALCULATED REMAINING LIFE DEPRECIATION ACCRUAL
RELATED TO ORIGINAL COST AS OF DECEMBER 31, 2017

YEAR (1)	ORIGINAL COST (2)	CALCULATED ACCRUED (3)	ALLOC. BOOK RESERVE (4)	FUTURE BOOK ACCRUALS (5)	REM. LIFE (6)	ANNUAL ACCRUAL (7)
SURVIVOR CURVE.. 15-SQUARE						
NET SALVAGE PERCENT.. 0						
1988	2,329.54	2,330	2,330			
1989	1,284.00	1,284	1,284			
1990	676.00	676	676			
1991	3,620.00	3,620	3,620			
1993	3,254.00	3,254	3,254			
1995	1,912.00	1,912	1,912			
1996	8,583.00	8,583	8,583			
1998	1,877.41	1,877	1,877			
2000	4,245.39	4,245	4,245			
2006	37,970.96	29,111	35,863	2,108	3.50	602
2007	342.41	240	296	46	4.50	10
2008	4,473.90	2,833	3,490	984	5.50	179
2009	4,348.00	2,464	3,035	1,313	6.50	202
2010	15,016.00	7,508	9,249	5,767	7.50	769
2011	17,500.35	7,583	9,342	8,158	8.50	960
2012	3,118.00	1,143	1,408	1,710	9.50	180
2013	808.00	242	298	510	10.50	49
2014	3,062.10	714	880	2,182	11.50	190
2015	25,067.71	4,178	5,147	19,921	12.50	1,594
2017	954.48	32	39	915	14.50	63
	140,443.25	83,829	96,828	43,615		4,798

COMPOSITE REMAINING LIFE AND ANNUAL ACCRUAL RATE, PERCENT .. 9.1 3.42

SUEZ WATER PENNSYLVANIA, INC.

ACCOUNT 346 COMMUNICATION EQUIPMENT

CALCULATED REMAINING LIFE DEPRECIATION ACCRUAL
RELATED TO ORIGINAL COST AS OF DECEMBER 31, 2017

YEAR (1)	ORIGINAL COST (2)	CALCULATED ACCRUED (3)	ALLOC. BOOK RESERVE (4)	FUTURE BOOK ACCRUALS (5)	REM. LIFE (6)	ANNUAL ACCRUAL (7)
SURVIVOR CURVE.. 10-SQUARE						
NET SALVAGE PERCENT.. 0						
1960	0.25					
1962	416.00	416	416			
1980	357.64	358	358			
1984	414.74	415	415			
1989	281.00	281	281			
1991	891.57	892	892			
1993	525.00	525	525			
1994	365.00	365	365			
1995	1,455.00	1,455	1,455			
1997	491.74	492	492			
1998	827.00	827	827			
1999	0.35					
2000	100,063.27	100,063	100,063			
2001	95,901.80	95,902	95,902			
2002	207,677.81	207,678	207,678			
2003	4,590.34	4,590	4,590			
2004	4,695.24	4,695	4,695			
2005	1,098,324.62	1,098,325	1,098,325			
2006	31,869.67	31,870	31,870			
2007	46,725.91	46,726	46,726			
2008	73,322.61	69,656	60,132	13,191	0.50	13,191
2009	270,709.32	230,103	198,642	72,067	1.50	48,045
2010	224,025.86	168,019	145,047	78,979	2.50	31,592
2011	26,630.92	17,310	14,943	11,688	3.50	3,339
2012	365,125.89	200,819	173,362	191,764	4.50	42,614
2013	203,363.64	91,514	79,002	124,362	5.50	22,611
2014	463,764.62	162,318	140,125	323,640	6.50	49,791
2015	311,617.76	77,904	67,253	244,365	7.50	32,582
2016	3,218,317.13	482,748	416,744	2,801,573	8.50	329,597
2017	81,275.96	4,064	3,508	77,768	9.50	8,186
	6,834,027.66	3,100,330	2,894,633	3,939,395		581,548

COMPOSITE REMAINING LIFE AND ANNUAL ACCRUAL RATE, PERCENT . . . 6.8 8.51

SUEZ WATER PENNSYLVANIA, INC.

ACCOUNT 347 MISCELLANEOUS EQUIPMENT

CALCULATED REMAINING LIFE DEPRECIATION ACCRUAL
RELATED TO ORIGINAL COST AS OF DECEMBER 31, 2017

YEAR (1)	ORIGINAL COST (2)	CALCULATED ACCRUED (3)	ALLOC. BOOK RESERVE (4)	FUTURE BOOK ACCRUALS (5)	REM. LIFE (6)	ANNUAL ACCRUAL (7)
SURVIVOR CURVE.. 15-SQUARE						
NET SALVAGE PERCENT.. 0						
2004	2,697.00	2,427	1,765	932	1.50	621
2005	2,825.83	2,355	1,713	1,113	2.50	445
2010	12,555.23	6,278	4,566	7,989	7.50	1,065
2011	2,106.83	913	664	1,443	8.50	170
2013	3,300.51	990	720	2,581	10.50	246
2015	21,945.51	3,658	2,660	19,286	12.50	1,543
2016	77,842.71	7,784	5,661	72,182	13.50	5,347
2017	24,580.48	819	596	23,984	14.50	1,654
	147,854.10	25,224	18,345	129,509		11,091

COMPOSITE REMAINING LIFE AND ANNUAL ACCRUAL RATE, PERCENT .. 11.7 7.50

PART III. EXPERIENCED NET SALVAGE

SUEZ WATER PENNSYLVANIA, INC.

EXPERIENCED RETIREMENTS BY ACCOUNT AND ASSOCIATED
COST OF REMOVAL, GROSS SALVAGE, AND NET SALVAGE

ACCT	REGULAR RETIREMENTS	COST OF REMOVAL	GROSS SALVAGE	NET SALVAGE
2013 TRANSACTION YEAR				
304.20	4,560.00	28,672.40	40,034.91	11,362.51
304.30	8,120.00	1,781.21-		1,781.21
304.51	12,822.76	5,900.00		5,900.00-
304.53		20,170.84-		20,170.84
311.20	120,289.64	3,201.96		3,201.96-
320.10	20,312.71	14.75		14.75-
320.30	3,752.11	166.60		166.60-
331.00	24,648.02	9,566.24		9,566.24-
333.00	18,970.43	7,370.62		7,370.62-
334.00	250,189.81	7,225.17	35,610.74	28,385.57
335.00	3,838.47	805.74	8,341.14	7,535.40
343.20		337.84-		337.84
346.00		846.59		846.59-
	467,503.95	41,480.18	83,986.79	42,506.61
2014 TRANSACTION YEAR				
304.20	4,312.30	250.00		250.00-
304.30	44,116.16	814.89		814.89-
304.51	7,387.96			
306.00	7,188.00	1,173.08		1,173.08-
307.00	5,029.83	18,327.52		18,327.52-
311.20	142,206.21	11,305.75		11,305.75-
320.10	116,746.64	22,903.49		22,903.49-
320.30	16,573.21	249.94		249.94-
330.00	789.24			
331.00	128,159.00	22,514.05		22,514.05-
333.00	34,279.98	7,671.94		7,671.94-
334.00	363,410.57	156,295.79	47,216.50	109,079.29-
335.00	1,546.52	495.22	408.70-	903.92-
340.10	22,081.79			
343.20	70,784.33			
346.00	210,225.13			
	1,174,836.87	242,001.67	46,807.80	195,193.87-

SUEZ WATER PENNSYLVANIA, INC.

EXPERIENCED RETIREMENTS BY ACCOUNT AND ASSOCIATED
COST OF REMOVAL, GROSS SALVAGE, AND NET SALVAGE

ACCT	REGULAR RETIREMENTS	COST OF REMOVAL	GROSS SALVAGE	NET SALVAGE
2015 TRANSACTION YEAR				
303.00	50,000.00	31,870.00		31,870.00-
304.20	34,639.57	990.70		990.70-
304.30	35,446.31	6,690.00		6,690.00-
304.51	4,082.76			
306.00	11,391.94			
307.00	19,975.32	2,450.00		2,450.00-
311.20	311,207.13	15,818.19		15,818.19-
320.10	34,839.68	277.81		277.81-
320.30	442,790.10	28,976.39		28,976.39-
330.00	203,288.06	188.67		188.67-
331.00	137,544.98	64,377.56		64,377.56-
333.00	23,853.16	11,224.85		11,224.85-
334.00	233,571.57	202,893.71	14,105.00	188,788.71-
335.00	6,512.74	2,330.16	4,271.68	1,941.52
340.10	2,330,409.50			
343.20	103,130.33			
346.00	1,039,972.04	2,032.28		2,032.28-
	5,022,655.19	370,120.32	18,376.68	351,743.64-
2016 TRANSACTION YEAR				
304.20	122,296.85	392.43		392.43-
304.30	432,146.41	3,490.94		3,490.94-
304.51	63,471.63			
306.00	43,080.34			
307.00	3,455.44			
311.20	348,953.52	19,218.04		19,218.04-
320.10	111,726.52	21.90		21.90-
320.30	445,167.27	23,238.73		23,238.73-
330.00	196,334.42	13,273.33		13,273.33-
331.00	248,153.98	194,519.10		194,519.10-
333.00	64,297.16	33,370.79		33,370.79-
334.00	912,384.96	78,538.97-	5,350.75	83,889.72-
335.00	12,086.80	3,610.97	2,452.58	1,158.39-
340.10	24,300.61	98.25		98.25-
340.20		47.19		47.19-
343.20	1,443.98			
346.00	213,640.68	786.09		786.09-
	3,242,940.57	213,528.79	7,803.33	205,725.46-

SUEZ WATER PENNSYLVANIA, INC.

EXPERIENCED RETIREMENTS BY ACCOUNT AND ASSOCIATED
COST OF REMOVAL, GROSS SALVAGE, AND NET SALVAGE

ACCT	REGULAR RETIREMENTS	COST OF REMOVAL	GROSS SALVAGE	NET SALVAGE
2017 TRANSACTION YEAR				
304.20	21,421.47	82.06		82.06-
304.30	7,552.57	8,379.82		8,379.82-
304.51	2,000.00			
304.53	800.00			
306.00	2,080.00			
307.00	6,000.00			
311.20	166,204.09	3,724.95		3,724.95-
320.10	73,911.78	501.26		501.26-
320.30	58,663.19	23,442.19		23,442.19-
330.00	54,640.00	11,261.80		11,261.80-
331.00	1,018,780.44	237,069.34		237,069.34-
333.00	132,871.27	42,620.10		42,620.10-
334.00	326,155.31	6,257.51-	13,554.00	19,811.51
335.00	24,266.42	2,742.08	902.80	1,839.28-
340.10	65,629.33			
343.20	20,293.39			
346.00	118,958.84	1,796.26		1,796.26-
	2,100,228.10	325,362.35	14,456.80	310,905.55-
TOTAL	12,008,164.68	1,192,493.31	171,431.40	1,021,061.91-



2018 DEPRECIATION STUDY

**CALCULATED ANNUAL DEPRECIATION
ACCRUALS RELATED TO WATER PLANT
AS OF DECEMBER 31, 2018**

Prepared by:



*Excellence Delivered **As Promised***

SUEZ WATER PENNSYLVANIA INC.
Harrisburg, Pennsylvania

2018 DEPRECIATION STUDY

CALCULATED ANNUAL DEPRECIATION ACCRUALS
RELATED TO WATER PLANT
AS OF DECEMBER 31, 2018

GANNETT FLEMING VALUATION AND RATE CONSULTANTS, LLC
Camp Hill, Pennsylvania



Excellence Delivered *As Promised*

April 20, 2018

SUEZ Water Pennsylvania Inc.
4211 E. Park Circle
Harrisburg, PA 17111

Attention Mr. John D. Hollenbach
Vice President, Mid Atlantic Division

Ladies and Gentlemen:

Pursuant to your request, we have determined the annual depreciation accruals applicable to water plant in service. The results of our study as of December 31, 2018 are presented in the attached report. The results of our study as of December 31, 2017 are presented in our report titled "2017 Depreciation Study - Calculated Annual Depreciation Accruals Related to Water Plant as of December 31, 2017". The same methods, procedures and estimates are used in both studies.

The attached report sets forth a description of the methods and procedures upon which the studies were based, the estimates of survivor curves and the calculated annual depreciation rates as of December 31, 2018.

Respectfully submitted,

GANNETT FLEMING VALUATION
AND RATE CONSULTANTS, LLC

A handwritten signature in blue ink that reads "John J. Spanos".

JOHN J. SPANOS
Sr. Vice President

JJS:mle

063817.100

Gannett Fleming Valuation and Rate Consultants, LLC

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PART I. INTRODUCTION

**SUEZ WATER PENNSYLVANIA INC.
DEPRECIATION STUDY**

PART I. INTRODUCTION

SCOPE

This report sets forth the results of the depreciation study conducted for United Water Pennsylvania Inc. to determine the annual depreciation accrual rates and amounts for ratemaking purposes applicable to the original cost of water plant as of December 31, 2018.

The depreciation accrual rates and amounts presented herein are based on estimated survivor curves and on methods and procedures set forth in previous orders approved by the Pennsylvania Public Utility Commission. The estimated survivor curves presented herein were based on the results of a service life study incorporating statistical analyses of data through 2013.

BASIS OF STUDY

Depreciation and Amortization

Depreciation, as defined in the Uniform System of Accounts, is the loss in service value not restored by current maintenance, incurred in connection with the consumption or prospective retirement of utility plant in the course of service from causes which are known to be in current operation and against which the utility is not protected by insurance. Among the causes to be given consideration are wear and tear, decay, action of the elements, inadequacy, obsolescence, changes in the art, changes in demand, and requirements of public authorities.

Depreciation, as used in accounting, is a method of distributing fixed capital costs over a period of time by allocating annual amounts to expense. Each annual

amount of such depreciation expense is part of that year's total cost of providing utility service. Normally, the period of time over which the fixed capital cost is allocated to the cost of service is equal to the period of time over which an item renders service, that is, the item's service life. The most prevalent method of allocation is to distribute an equal amount of cost to each year of service life. This method is known as the straight line method of depreciation.

The calculation of annual and accrued depreciation based on the straight line method requires the estimation of survivor curves and the selection of group depreciation procedures. These subjects are discussed in the sections which follow. For most plant accounts, depreciation accruals and accrued depreciation were calculated using the straight line method, the remaining life basis and the equal life group (ELG) procedure. The calculations were based on the attained ages and estimated service life characteristics for each depreciable group of water property. For certain general plant accounts, the amortization amounts, annual and accrued, were based on the age of the vintage and the selected amortization period.

Survivor curves were used to reflect the expected dispersion of retirements, thus providing a consistent method of estimating service lives and depreciation for mass property. Iowa type curves were used to depict the estimated survivor curves. For life span groups, the estimate of life characteristics is consistent because the calculated lives of the units within a group are obtained by employing a single probable retirement date for the entire group.

Service Life Estimates

The method of estimating service life consisted of compiling the service life history of the plant accounts, subaccounts or depreciable groups, reducing this history to trends through the use of acceptable actuarial techniques, and forecasting the trend of survivors for each depreciable group on the basis of interpretations of past trends and consideration of Company plans for the future. The combination of the historical trend and the estimated future trend yielded a complete pattern of life characteristics from which the average service life was derived.

The Company's service life estimates used in the depreciation calculation incorporated historical data compiled through 2013 from the property records of the Company. Such data included plant additions, retirements, transfers and other activity. Generally, retirement data for the years 1974 through 2013 were used in the actuarial life table computations which were the primary statistical support of the service life estimates.

A general understanding of the function of the plant and information with respect to the reasons for past retirements and the expected future causes of retirement was obtained through field trips conducted during the course of the service life study. Discussions with operating and management personnel also provided information regarding plans for the future which was incorporated in the interpretation and extrapolation of the statistical analyses.

Amortization of Net Salvage

Inasmuch as this report relates primarily to Pennsylvania rate regulation practices, under which experienced costs of negative net salvage are amortized after their occurrence, no adjustments for expected salvage were made to either the annual

depreciation accrual or the calculated accrued depreciation for the individual accounts. The annual provision for recovering negative net salvage is based on the amortization of net salvage over a five-year period, as established by the Commission.

PART II. ESTIMATION OF SURVIVOR CURVES

PART II. ESTIMATION OF SURVIVOR CURVES

Survivor Curves

The use of an average service life for a property group implies that the various units in the group have different lives. Thus, the average life may be obtained by determining the separate lives of each of the units, or by constructing a survivor curve by plotting the number of units which survive at successive ages. The use of survivor curves, which reflect experienced and expected dispersion of service lives, is a systematic and rational means of estimating average service lives to be used to calculate depreciation for utility property. A discussion of the general concept of survivor curves and the Iowa type survivor curves is presented.

The survivor curve graphically depicts the amount of property existing at each age throughout the life of an original group. From the survivor curve, the average life of the group, the remaining life expectancy, the probable life and the frequency curve can be calculated. In Figure 1, a typical smooth survivor curve and the derived curves are illustrated. The average life is obtained by calculating the area under the survivor curve, from age zero to the maximum age, and dividing this area by the ordinate at age zero. The remaining life expectancy at any age can be calculated by obtaining the area under the curve, from the observation age to the maximum age, and dividing this area by the percent surviving at the observation age. For example, in Figure 1 the remaining life at age 30 years is equal to the crosshatched area under the survivor curve divided by 29.5 percent surviving at age 30. The probable life at any age is developed by adding the age and remaining life. If the probable life of the property is calculated for each year of age, the probable life curve shown in the chart can be developed. The frequency curve presents the number of units

retired in each age interval and is derived by obtaining the differences between the amount of property surviving at the beginning and at the end of each interval.

Iowa Type Curves

The range of survivor characteristics usually experienced by utility and industrial properties is encompassed by a system of generalized survivor curves known as the Iowa type curves. There are four families in the Iowa system, labeled in accordance with the location of the modes of the retirements in relationship to the average life and the relative height of the modes. The left moded curves, presented in Figure 2, are those in which the greatest frequency of retirement occurs to the left of, or prior to, average service life. The symmetrical moded curves, presented in Figure 3, are those in which the greatest frequency of retirement occurs at average service life. The right moded curves, presented in Figure 4, are those in which the greatest frequency occurs to the right of, or after, average service life. The origin moded curves, presented in Figure 5, are those in which the greatest frequency of retirement occurs at the origin, or immediately after age zero. The letter designation of each family of curves (L, S, R or O) represents the location of the mode of the associated frequency curve with respect to the average service life. The numerical subscripts represent the relative heights of the modes of the frequency curves within each family.

The Iowa curves were developed at the Iowa State College Engineering Experiment Station through an extensive process of observation and classification of the ages at which industrial property had been retired. A report of the study which resulted in the classification of property survivor characteristics into 18 type curves, which constitute three of the four families, was published in 1935 in the form of the

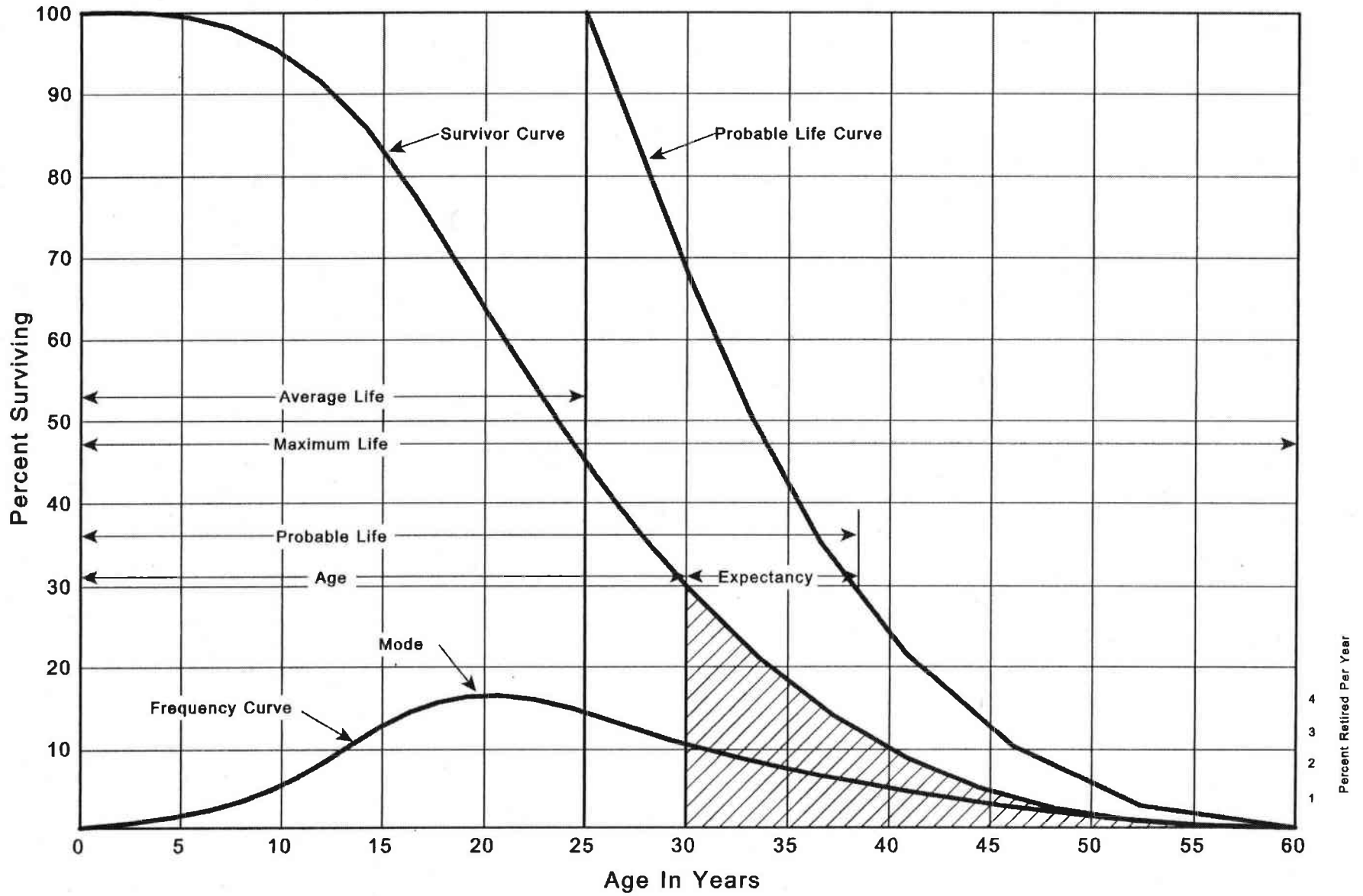


Figure 1. A Typical Survivor Curve and Derived Curves

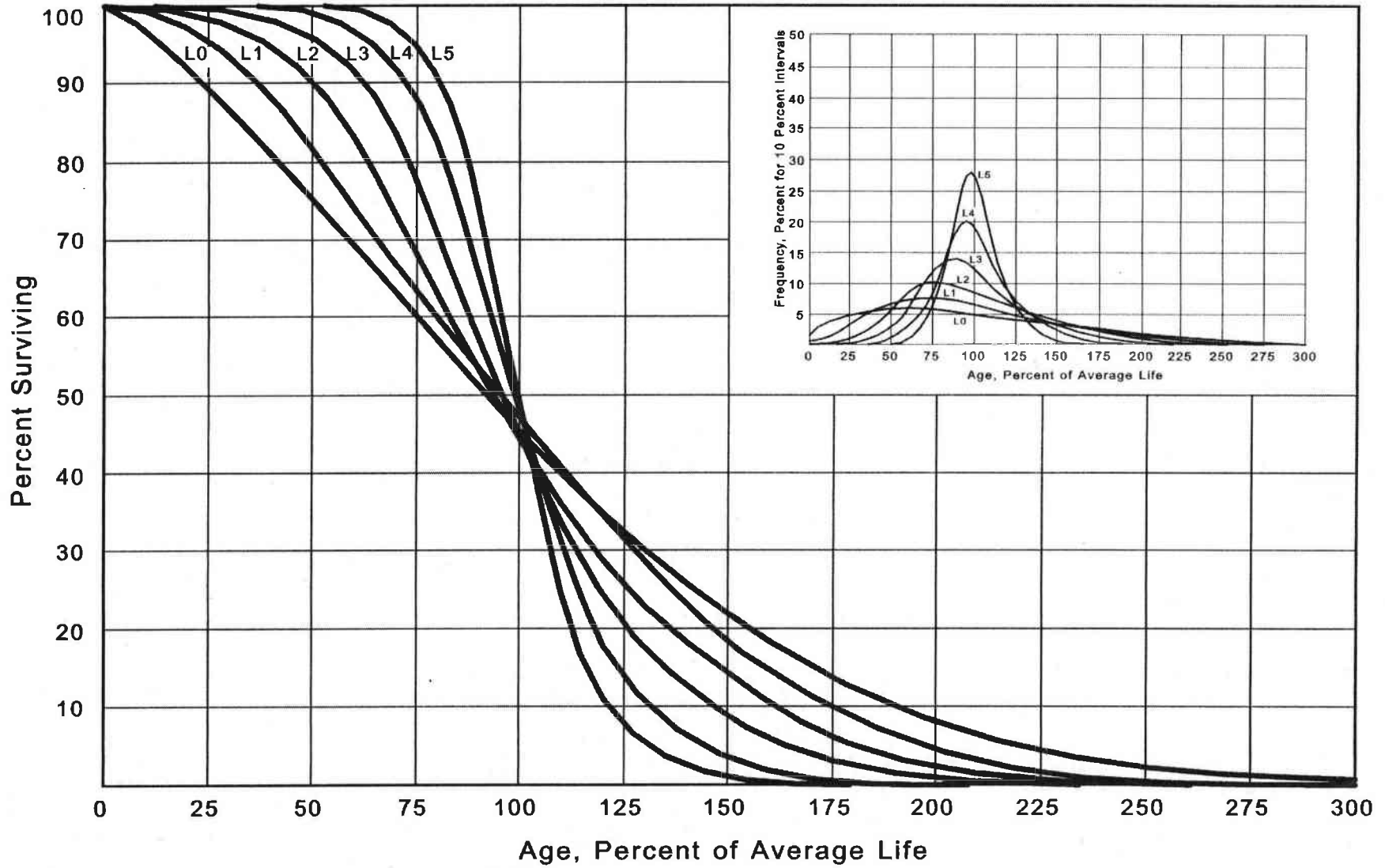


Figure 2. Left Modal or "L" Iowa Type Survivor Curves

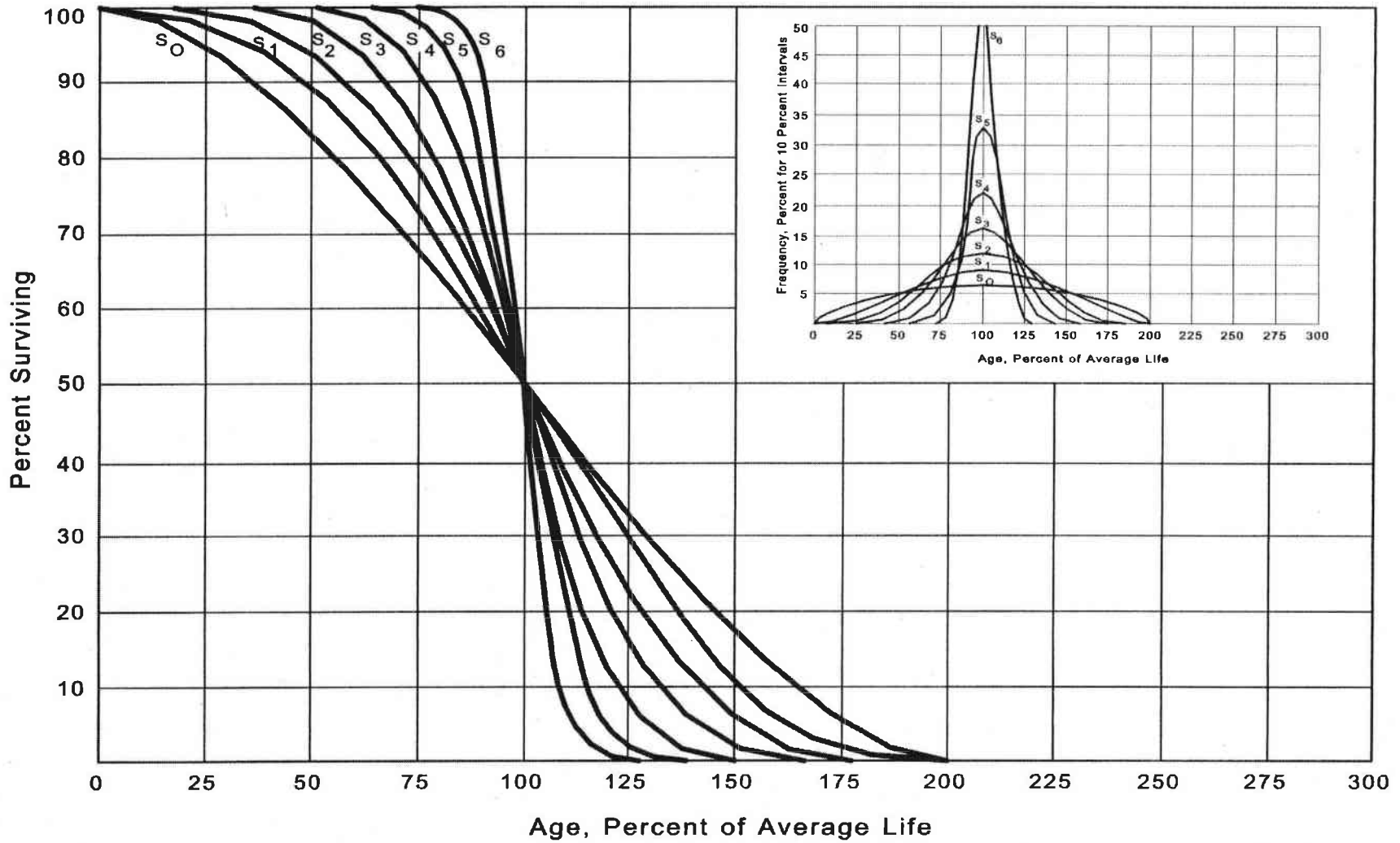


Figure 3. Symmetrical or "S" Iowa Type Survivor Curves

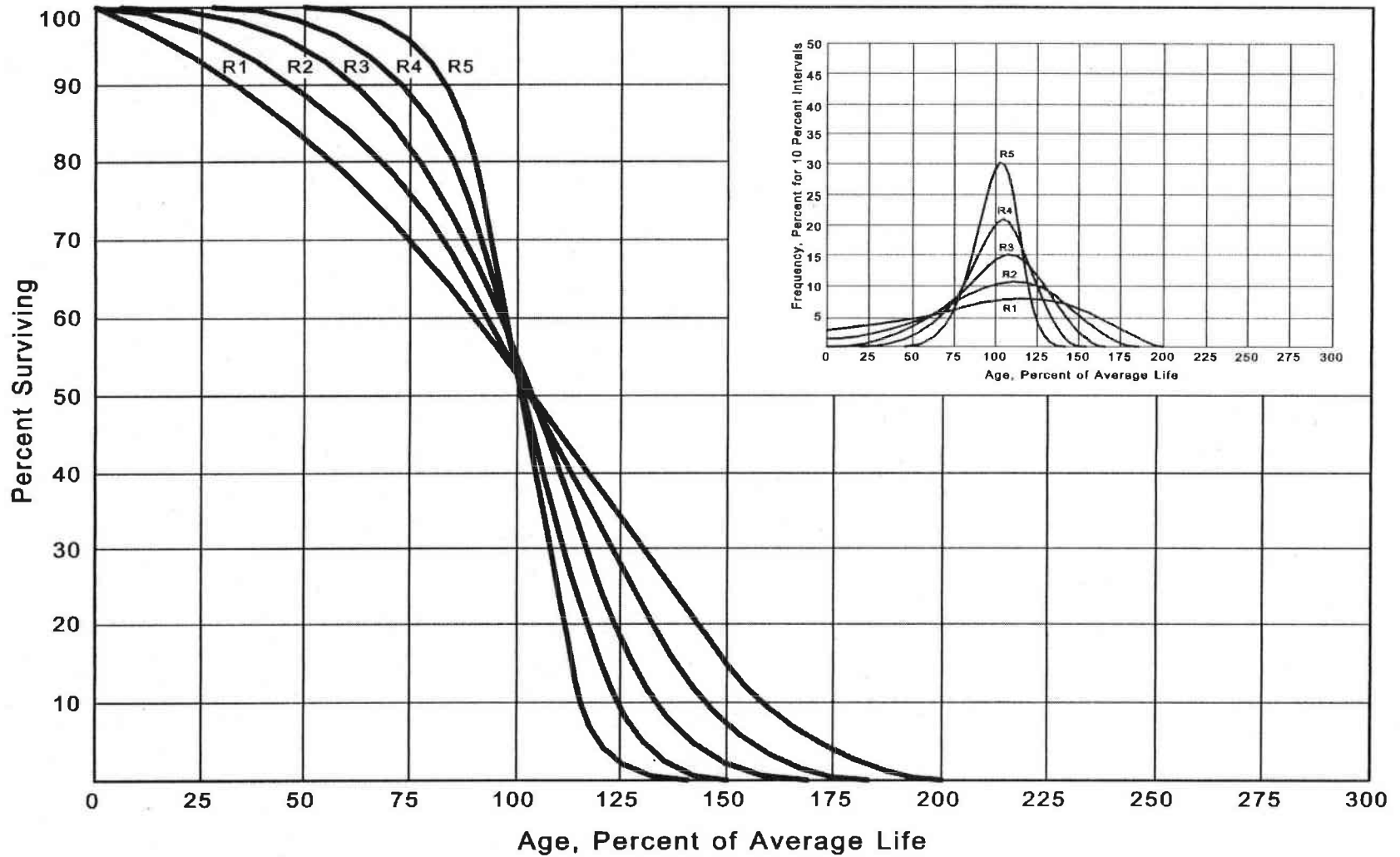


Figure 4. Right Modal or "R" Iowa Type Survivor Curves

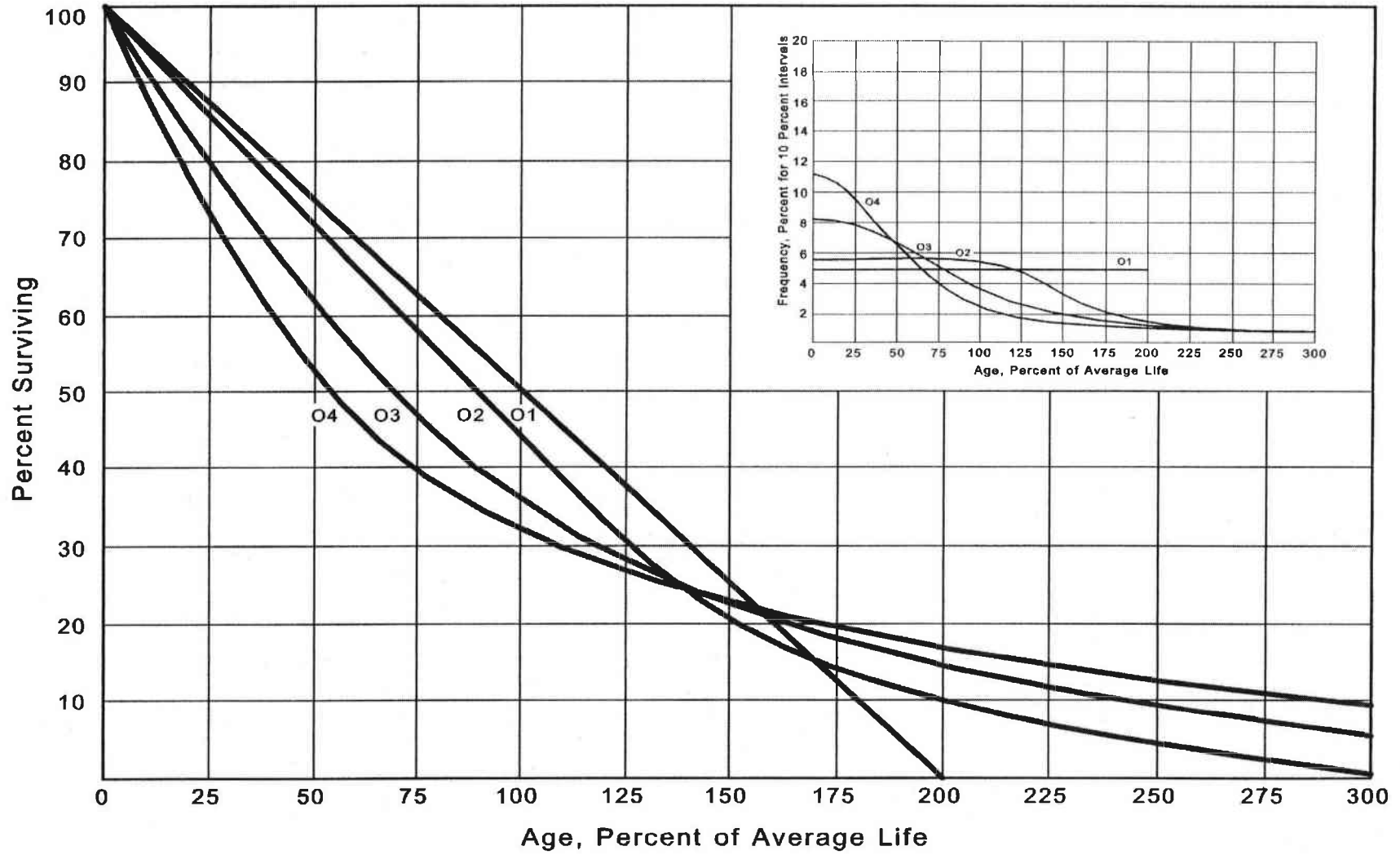


Figure 5. Origin Modal or "O" Iowa Type Survivor Curves

Experiment Station's Bulletin 125.¹ These curve types have also been presented in subsequent Experiment Station bulletins and in the text, "Engineering Valuation and Depreciation."² In 1957, Frank V. B. Couch, Jr., an Iowa State College graduate student submitted a thesis presenting his development of the fourth family consisting of the four O type survivor curves.

Survivor curves for groups in which all property is expected to be retired concurrently, such as power plants, are obtained by truncating smooth survivor curves at an age before zero percent surviving is reached. Such groups to which truncated survivor curves are applicable are designated as life span groups. In life span groups of one or more vintages, future retirements of all property included in the group are anticipated to occur at a specific date or over a restricted range of future dates which are represented by an estimated probable retirement date. Survivor curves for life span groups can be developed using both available historical experience and known or forecasted retirement dates. The life span of both the original installation and a subsequent addition is the number of years which elapse between its installation and the final retirement of the group. During the life of the group as a whole, interim retirements normally occur between age zero and the maximum age to produce a survivor pattern which is referred to as an "interim survivor curve".

Retirement Rate Method of Analysis

The retirement rate method is an actuarial method of deriving survivor curves using the average rates at which property of each age group is retired. The method relates to property groups for which aged accounting experience is available or for

¹ Winfrey, Robley. Statistical Analyses of Industrial Property Retirements. Iowa State College, Engineering Experiment Station, Bulletin 125. 1935.

²Marston, Anson, Robley Winfrey and Jean C. Hempstead. Engineering Valuation and Depreciation, 2nd Edition. New York, McGraw-Hill Book Company. 1953.

which aged accounting experience is developed by statistically aging unaged amounts and is the method used to develop the original stub survivor curves in this study. The method (also known as the annual rate method) is illustrated through the use of an example in the following text, and is also explained in several publications, including "Statistical Analyses of Industrial Property Retirements,"³ "Engineering Valuation and Depreciation,"⁴ and "Depreciation Systems."⁵

The average rate of retirement used in the calculation of the percent surviving for the survivor curve (life table) requires two sets of data: first, the property retired during a period of observation, identified by the property's age at retirement; and second, the property exposed to retirement at the beginning of the age intervals during the same period. The period of observation is referred to as the experience band, and the band of years which represent the installation dates of the property exposed to retirement during the experience band is referred to as the placement band. An example of the calculations used in the development of a life table follows. The example includes schedules of annual aged property transactions, a schedule of plant exposed to retirement, a life table and illustrations of smoothing the stub survivor curve.

Schedules of Annual Transactions in Plant Records.

The property group used to illustrate the retirement rate method is observed for the experience band 2008-2017 during which there were placements during the years 2003-2017. In order to illustrate the summation of the aged data by age interval, the data were compiled in the manner presented in Schedules 1 and 2 on pages II-12 and II-13. In Schedule 1, the year of installation (year placed) and the year of retirement

³Winfrey, Robley, Supra Note 1.

⁴Marston, Anson, Robley Winfrey, and Jean C. Hempstead, Supra Note 2.

⁵Wolf, Frank K. and W. Chester Fitch. Depreciation Systems. Iowa State University Press. 1994.

are shown. The age interval during which a retirement occurred is determined from this information. In the example which follows, \$10,000 of the dollars invested in 2003 were retired in 2008. The \$10,000 retirement occurred during the age interval between 4½ and 5½ years on the basis that approximately one-half of the amount of property was installed prior to and subsequent to July 1 of each year. That is, on the average, property installed during a year is placed in service at the midpoint of the year for the purpose of the analysis. All retirements also are stated as occurring at the midpoint of a one-year age interval of time, except the first age interval which encompasses only one-half year.

The total retirements occurring in each age interval in a band are determined by summing the amounts for each transaction year-installation year combination for that age interval. For example, the total of \$143,000 retired for age interval 4½-5½ is the sum of the retirements entered on Schedule 1 immediately above the stairstep line drawn on the table beginning with the 2008 retirements of 2003 installations and ending with the 2017 retirements of the 2012 installations. Thus, the total amount of 143 for age interval 4½-5½ equals the sum of:

$$10 + 12 + 13 + 11 + 13 + 13 + 15 + 17 + 19 + 20.$$

In Schedule 2, other transactions which affect the group are recorded in a similar manner. The entries illustrated include transfers and sales. The entries which are credits to the plant account are shown in parentheses. The items recorded on this schedule are not totaled with the retirements but are used in developing the exposures at the beginning of each age interval.

**SCHEDULE 1. RETIREMENTS FOR EACH YEAR 2008-2017
SUMMARIZED BY AGE INTERVAL**

Experience Band 2008-2017

Placement Band 2003-2017

Year	Retirements, Thousands of Dollars										Total During Age Interval	Age Interval
	During Year											
Placed	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	(12)	(13)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)		
2003	10	11	12	13	14	16	23	24	25	26	26	13½-14½
2004	11	12	13	15	16	18	20	21	22	19	44	12½-13½
2005	11	12	13	14	16	17	19	21	22	18	64	11½-12½
2006	8	9	10	11	11	13	14	15	16	17	83	10½-11½
2007	9	10	11	12	13	14	16	17	19	20	93	9½-10½
2008	4	9	10	11	12	13	14	15	16	20	105	8½-9½
2009		5	11	12	13	14	15	16	18	20	113	7½-8½
2010			6	12	13	15	16	17	19	19	124	6½-7½
2011				6	13	15	16	17	19	19	131	5½-6½
2012					7	14	16	17	19	20	143	4½-5½
2013						8	18	20	22	23	146	3½-4½
2014							9	20	22	25	150	2½-3½
2015								11	23	25	151	1½-2½
2016									11	24	153	½-1½
2017										13	80	0-½
Total	53	68	86	106	128	157	196	231	273	308	1,606	

SCHEDULE 2. OTHER TRANSACTIONS FOR EACH YEAR 2008-2017
SUMMARIZED BY AGE INTERVAL

Experience Band 2008-2017

Placement Band 2003-2017

Year Placed (1)	Acquisitions, Transfers and Sales, Thousands of Dollars										Total During Age Interval (12)	Age Interval (13)
	During Year											
	2008 (2)	2009 (3)	2010 (4)	2011 (5)	2012 (6)	2013 (7)	2014 (8)	2015 (9)	2016 (10)	2017 (11)		
2003	-	-	-	-	-	-	60 ^a	-	-	-	-	13½-14½
2004	-	-	-	-	-	-	-	-	-	-	-	12½-13½
2005	-	-	-	-	-	-	-	-	-	-	-	11½-12½
2006	-	-	-	-	-	-	-	(5) ^b	-	-	60	10½-11½
2007	-	-	-	-	-	-	-	6 ^a	-	-	-	9½-10½
2008	-	-	-	-	-	-	-	-	-	-	(5)	8½-9½
2009	-	-	-	-	-	-	-	-	-	-	6	7½-8½
2010	-	-	-	-	-	-	-	-	-	-	-	6½-7½
2011	-	-	-	-	-	-	-	(12) ^b	-	-	-	5½-6½
2012	-	-	-	-	-	-	-	-	22 ^a	-	-	4½-5½
2013	-	-	-	-	-	-	-	(19) ^b	-	-	10	3½-4½
2014	-	-	-	-	-	-	-	-	-	-	-	2½-3½
2015	-	-	-	-	-	-	-	-	-	(102) ^c	(121)	1½-2½
2016	-	-	-	-	-	-	-	-	-	-	-	½-1½
2017	-	-	-	-	-	-	-	-	-	-	-	0-½
Total	-	-	-	-	-	-	60	(30)	22	(102)	(50)	

^a Transfer Affecting Exposures at Beginning of Year

^b Transfer Affecting Exposures at End of Year

^c Sale with Continued Use

Parentheses Denote Credit Amount.

Schedule of Plant Exposed to Retirement.

The development of the amount of plant exposed to retirement at the beginning of each age interval is illustrated in Schedule 3 on page II-15.

The surviving plant at the beginning of each year from 2008 through 2017 is recorded by year in the portion of the table headed "Annual Survivors at the Beginning of the Year". The last amount entered in each column is the amount of new plant added to the group during the year. The amounts entered in Schedule 3 for each successive year following the beginning balance or addition are obtained by adding or subtracting the net entries shown on Schedules 1 and 2. For the purpose of determining the plant exposed to retirement, transfers-in are considered as being exposed to retirement in this group at the beginning of the year in which they occurred, and the sales and transfers-out are considered to be removed from the plant exposed to retirement at the beginning of the following year. Thus, the amounts of plant shown at the beginning of each year are the amounts of plant from each placement year considered to be exposed to retirement at the beginning of each successive transaction year. For example, the exposures for the installation year 2013 are calculated in the following manner:

Exposures at age 0	=	amount of addition	=	\$750,000
Exposures at age ½	=	\$750,000- \$ 8,000	=	\$742,000
Exposures at age 1½	=	\$742,000- \$18,000	=	\$724,000
Exposures at age 2½	=	\$724,000- \$20,000 - \$19,000	=	\$685,000
Exposures at age 3½	=	\$685,000- \$22,000	=	\$663,000

For the entire experience band 2008-2017 the total exposures at the beginning of an age interval are obtained by summing diagonally in a manner similar to the summing of the retirements during an age interval (Schedule 1). For example, the figure of 3,789,

**SCHEDULE 3. PLANT EXPOSED TO RETIREMENT
JANUARY 1 OF EACH YEAR 2008-2017
SUMMARIZED BY AGE INTERVAL**

Experience Band 2008-2017

Placement Band 2003-2017

Year Placed	Exposures, Thousands of Dollars										Total at Beginning of Age Interval	Age Interval
	Annual Survivors at the Beginning of the Year											
	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
2003	255	245	234	222	209	195	239	216	192	167	167	13½-14½
2004	279	268	256	243	228	212	194	174	153	131	323	12½-13½
2005	307	296	284	271	257	241	224	205	184	162	531	11½-12½
2006	338	330	321	311	300	289	276	262	242	226	823	10½-11½
2007	376	367	357	346	334	321	307	297	280	261	1,097	9½-10½
2008	420 ^a	416	407	397	386	374	361	347	332	316	1,503	8½-9½
2009		460 ^a	455	444	432	419	405	390	374	356	1,952	7½-8½
2010			510 ^a	504	492	479	464	448	431	412	2,463	6½-7½
2011				580 ^a	574	561	546	530	501	482	3,057	5½-6½
2012					660 ^a	653	639	623	628	609	3,789	4½-5½
2013						750 ^a	742	724	685	663	4,332	3½-4½
2014							850 ^a	841	821	799	4,955	2½-3½
2015								960 ^a	949	926	5,719	1½-2½
2016									1,080 ^a	1,069	6,579	½-1½
2017										1,220 ^a	7,490	0-½
Total	1,975	2,382	2,824	3,318	3,872	4,494	5,247	6,017	6,852	7,799	44,780	

^aAdditions during the year

shown as the total exposures at the beginning of age interval 4½-5½, is obtained by summing:

$$255 + 268 + 284 + 311 + 334 + 374 + 405 + 448 + 501 + 609.$$

Original Life Table

The original life table, illustrated in Schedule 4 on page II-17, is developed from the totals shown on the schedules of retirements and exposures, Schedules 1 and 3, respectively. The exposures at the beginning of the age interval are obtained from the corresponding age interval of the exposure schedule, and the retirements during the age interval are obtained from the corresponding age interval of the retirement schedule. The retirement ratio is the result of dividing the retirements during the age interval by the exposures at the beginning of the age interval. The percent surviving at the beginning of each age interval is derived from survivor ratios, each of which equals one minus the retirement ratio. The percent surviving is developed by starting with 100% at age zero and successively multiplying the percent surviving at the beginning of each interval by the survivor ratio, i.e., one minus the retirement ratio for that age interval.

The calculations necessary to determine the percent surviving at age 5½ are as follows:

Percent surviving at age 4½	=	88.15	
Exposures at age 4½	=	3,789,000	
Retirements from age 4½ to 5½	=	143,000	
Retirement Ratio	=	$143,000 \div 3,789,000$	= 0.0377
Survivor Ratio	=	$1.000 - 0.0377$	= 0.9623
Percent surviving at age 5½	=	$(88.15) \times (0.9623)$	= 84.83

SCHEDULE 4. ORIGINAL LIFE TABLE
CALCULATED BY THE RETIREMENT RATE METHOD

Experience Band 2008-2017

Placement Band 2003-2017

(Exposure and Retirement Amounts are in Thousands of Dollars)

Age at Beginning of <u>Interval</u> (1)	Exposures at Beginning of <u>Age Interval</u> (2)	Retirements During Age <u>Interval</u> (3)	Retirement <u>Ratio</u> (4)	Survivor <u>Ratio</u> (5)	Percent Surviving at Beginning of <u>Age Interval</u> (6)
0.0	7,490	80	0.0107	0.9893	100.00
0.5	6,579	153	0.0233	0.9767	98.93
1.5	5,719	151	0.0264	0.9736	96.62
2.5	4,955	150	0.0303	0.9697	94.07
3.5	4,332	146	0.0337	0.9663	91.22
4.5	3,789	143	0.0377	0.9623	88.15
5.5	3,057	131	0.0429	0.9571	84.83
6.5	2,463	124	0.0503	0.9497	81.19
7.5	1,952	113	0.0579	0.9421	77.11
8.5	1,503	105	0.0699	0.9301	72.65
9.5	1,097	93	0.0848	0.9152	67.57
10.5	823	83	0.1009	0.8991	61.84
11.5	531	64	0.1205	0.8795	55.60
12.5	323	44	0.1362	0.8638	48.90
13.5	<u>167</u>	<u>26</u>	0.1557	0.8443	42.24
					35.66
Total	<u>44,780</u>	<u>1,606</u>			

Column 2 from Schedule 3, Column 12, Plant Exposed to Retirement.

Column 3 from Schedule 1, Column 12, Retirements for Each Year.

Column 4 = Column 3 divided by Column 2.

Column 5 = 1.0000 minus Column 4.

Column 6 = Column 5 multiplied by Column 6 as of the Preceding Age Interval.

The totals of the exposures and retirements (Columns 2 and 3) are shown for the purpose of checking with the respective totals in Schedules 1 and 3. The ratio of the total retirements to the total exposures, other than for each age interval, is meaningless.

The original survivor curve is plotted from the original life table (Column 6, Schedule 4). When the curve terminates at a percent surviving greater than zero, it is called a stub survivor curve. Survivor curves developed from retirement rate studies generally are stub curves.

Smoothing the Original Survivor Curve

The smoothing of the original survivor curve eliminates any irregularities and serves as the basis for the preliminary extrapolation to zero percent surviving of the original stub curve. Even if the original survivor curve is complete from 100% to zero percent, it is desirable to eliminate any irregularities, as there is still an extrapolation for the vintages which have not yet lived to the age at which the curve reaches zero percent. In this study, the smoothing of the original curve with established type curves was used to eliminate irregularities in the original curve.

The lowa type curves are used in this study to smooth those original stub curves which are expressed as percents surviving at ages in years. Each original survivor curve was compared to the lowa curves using visual and mathematical matching in order to determine the better fitting smooth curves. In Figures 6, 7, and 8, the original curve developed in Schedule 4 is compared with the L, S, and R lowa type curves which most nearly fit the original survivor curve. In Figure 6, the L1 curve with an average life between 12 and 13 years appears to be the best fit. In Figure 7, the SO type curve with a 12-year average life appears to be the best fit and appears to be better than the L1 fitting. In Figure 8, the R1 type curve with a 12-year average life

appears to be the best fit and appears to be better than either the L1 or the SO. In Figure 9, the three fittings, 12-L1, 12-SO, and 12-R1 are drawn for comparison purposes. It is probable that the 12-R1 lowa curve would be selected as the most representative of the plotted survivor characteristics of the group, assuming no contrary relevant factors external to the analysis of historical data.



FIGURE 6. ILLUSTRATION OF THE MATCHING OF AN ORIGINAL SURVIVOR CURVE WITH AN L1 IOWA TYPE CURVE
ORIGINAL AND SMOOTH SURVIVOR CURVES

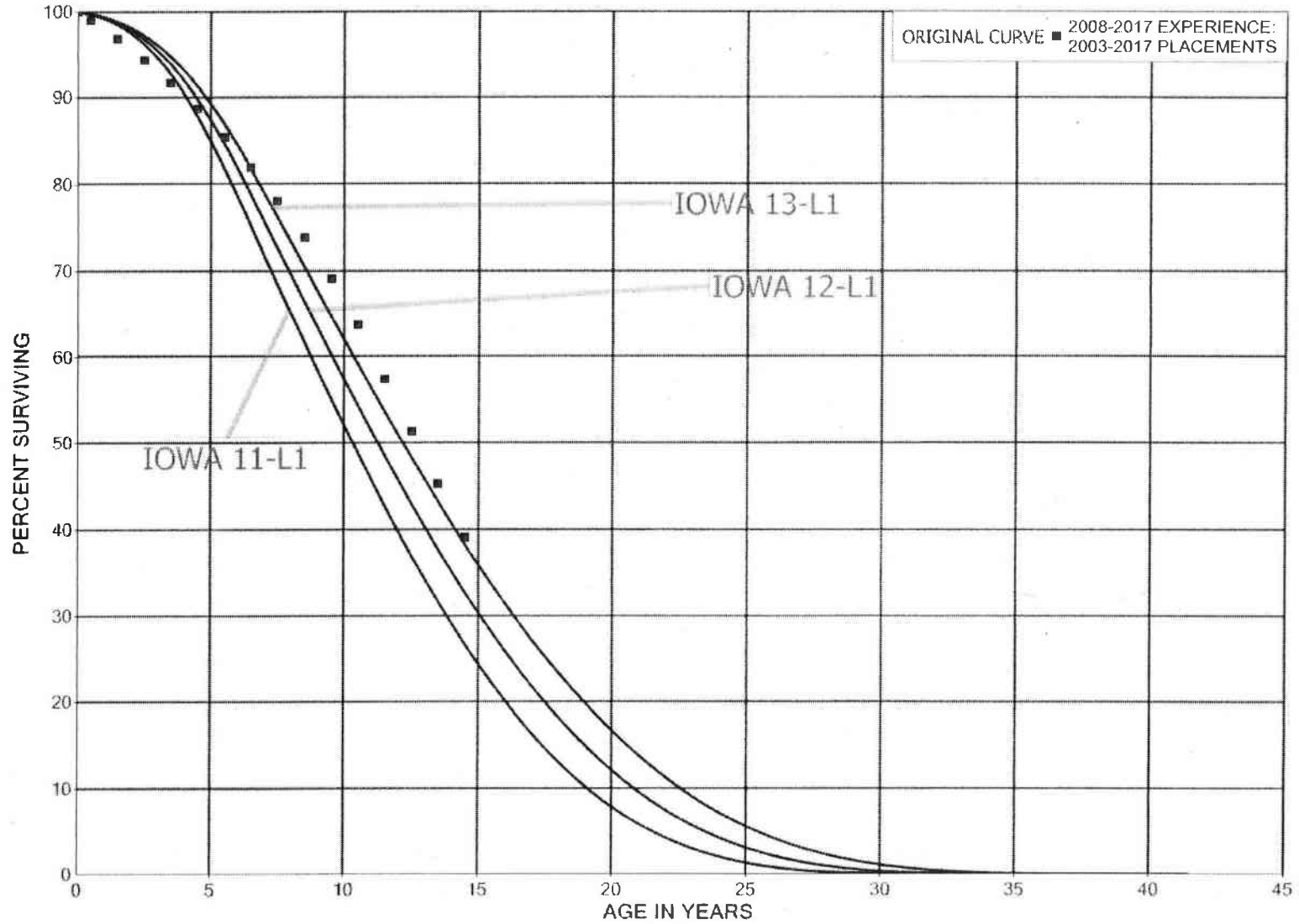


FIGURE 7. ILLUSTRATION OF THE MATCHING OF AN ORIGINAL SURVIVOR CURVE WITH AN S0 IOWA TYPE CURVE
ORIGINAL AND SMOOTH SURVIVOR CURVES

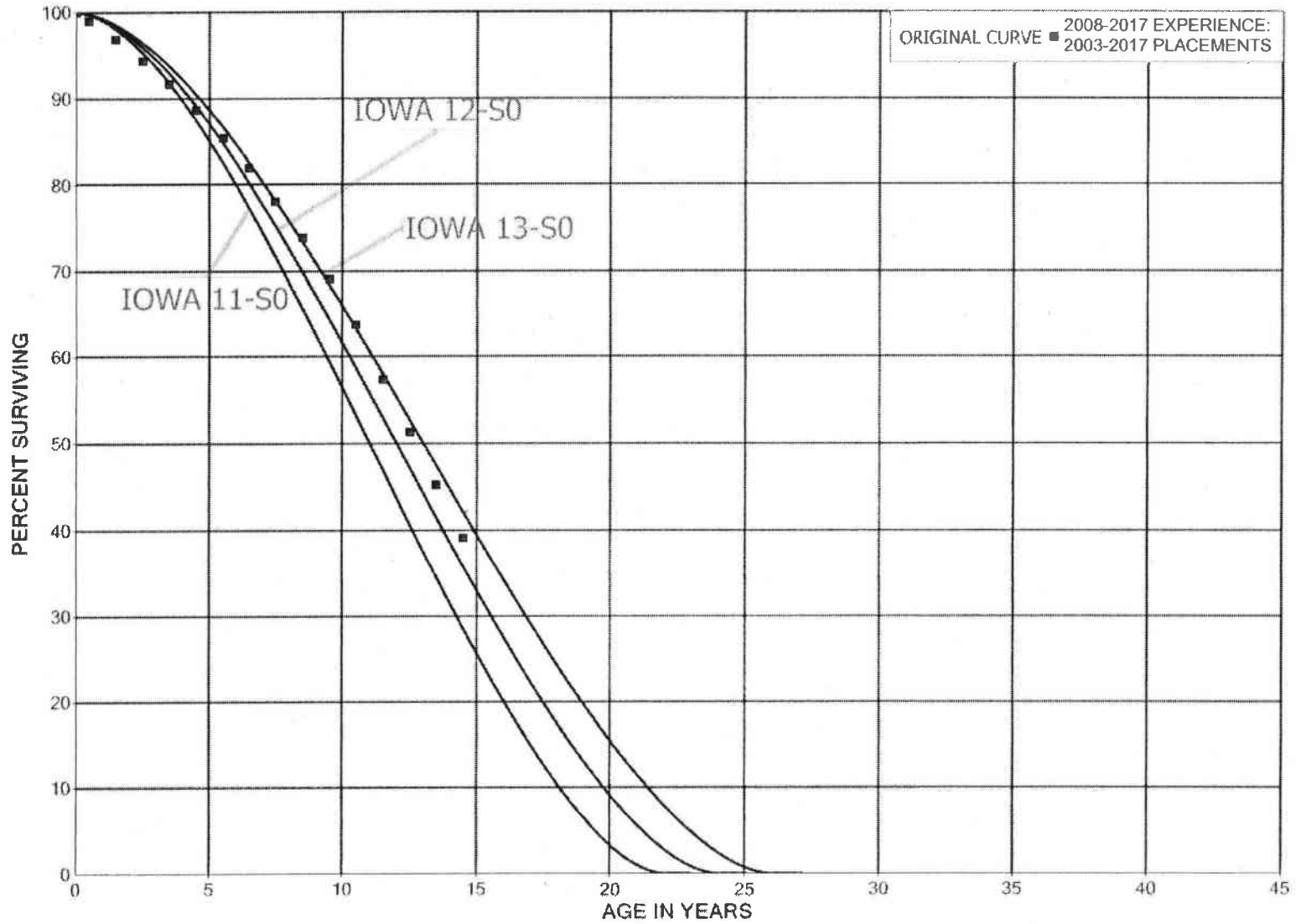




FIGURE 8. ILLUSTRATION OF THE MATCHING OF AN ORIGINAL SURVIVOR CURVE WITH AN R1 IOWA TYPE CURVE ORIGINAL AND SMOOTH SURVIVOR CURVES

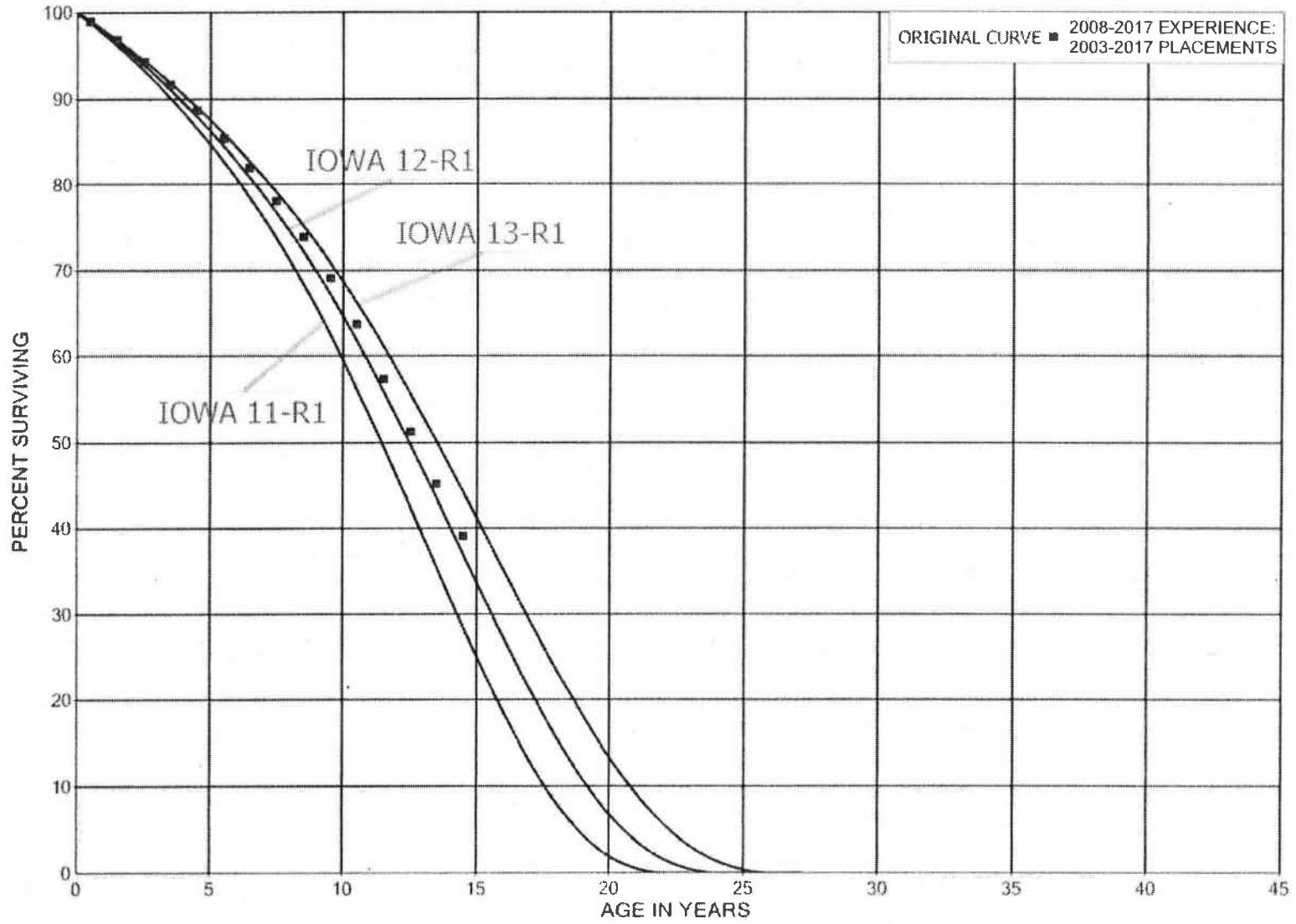
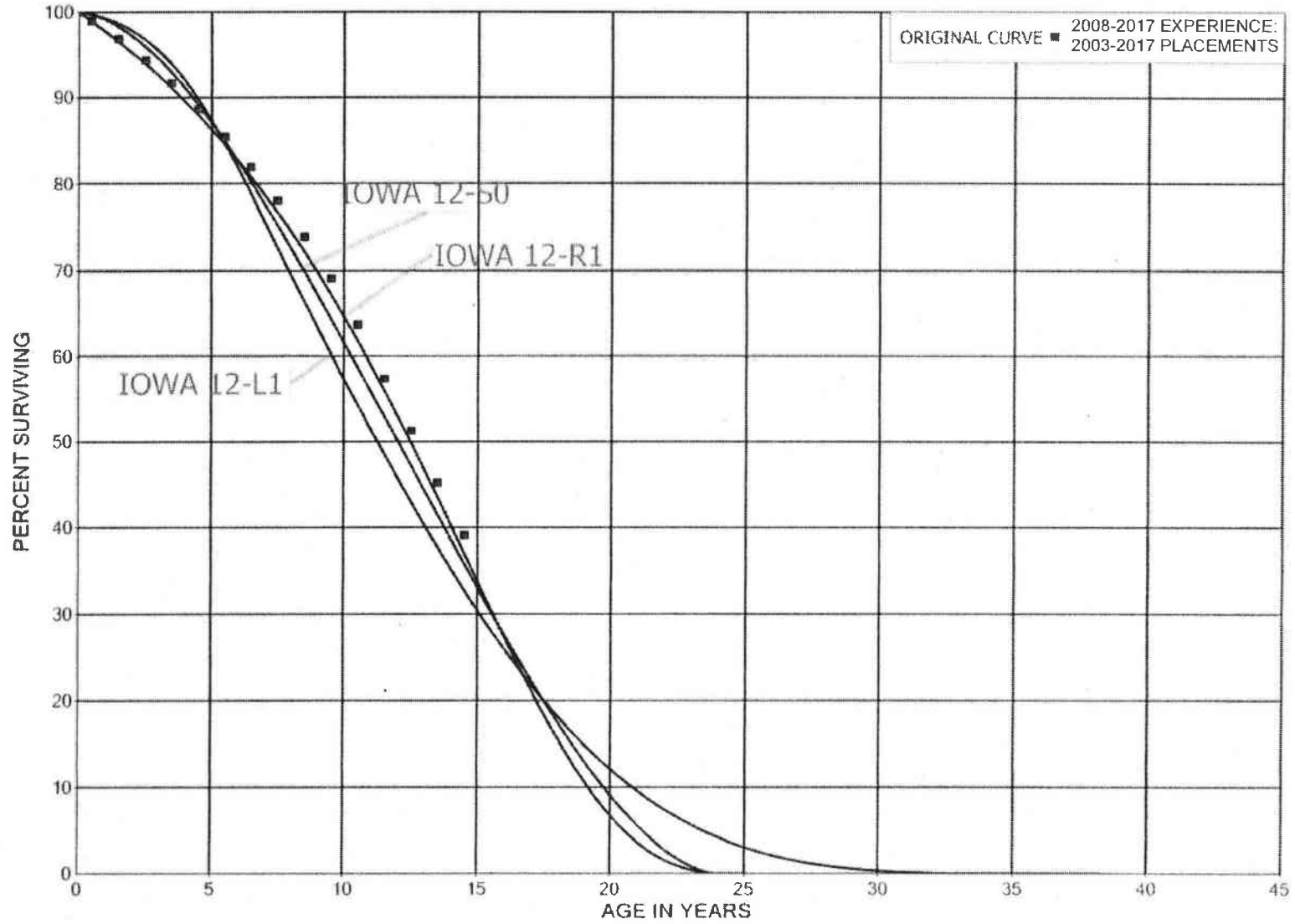


FIGURE 9. ILLUSTRATION OF THE MATCHING OF AN ORIGINAL SURVIVOR CURVE WITH AN L1, S0 AND R1 IOWA TYPE CURVE
ORIGINAL AND SMOOTH SURVIVOR CURVES



PART III. SERVICE LIFE CONSIDERATIONS

PART III. SERVICE LIFE CONSIDERATIONS

Field Trips

In order to be familiar with the operation of the Company and observe representative portions of the plant, field trips have been conducted periodically. A general understanding of the function of the plant and information with respect to the reasons for past retirements and the expected future causes of retirements are obtained during these field trips. This knowledge and information were incorporated in the interpretation and extrapolation of the statistical analyses.

The plant facilities visited in 2009 and 2014 are set forth in the following list by date visited.

August 6, 2014

- Locust Lane Pump Station and Tank
- Adams Drive Office and Maintenance Facility
- Chambers Hill Reservoir and Booster Station
- Hummelstown Treatment Plant
- Rabold Treatment Plant
- Mt. Allen Booster Station and Reservoir
- Market Street Treatment Plant
- 6th Street Treatment Plant
- Parkway West Tank

August 6, 2009

- East Park Booster Station
- Chambers Hill Reservoir and Booster Station
- Adams Drive Office and Maintenance Facility
- Hummelstown Treatment Plant – Old
- Hummelstown Treatment Plant – New
- Locust Lane Pump Station and Tank
- 6th Street Treatment Plant
- Market Street Treatment Plant
- Edgewood Tank
- Mt. Allen Booster Station and Reservoir
- Mechanicsburg Booster Station
- Rabold Treatment Plant – Old
- Rabold Treatment Plant - New

Judgment

The survivor curve estimates were based on judgment which considered factors including statistical analyses of retirements, Company policies and outlook as determined during field trips and other discussions with management, and survivor curve estimates from previous studies of the Company, as well as other water companies. For depreciable groups which consist of numerous similar items of property, the distribution of the lives of the units in the group was judged on the basis of an average survival pattern for the entire group. The judgments for a life span group were made by estimating the life of the major facility in the group and assigning lives to the related items of property which terminate at the probable retirement date of the major facility.

The life span estimates for structures and equipment in Accounts 304.3, 304.52, 306 and 320.1 were based on the type of construction, attained age, observed features and conditions at the time of field visits, and specific plans of management. The following tabulation sets forth the estimated life span for each life span group.

<u>Life Span Group</u>	<u>Life Span</u>
<u>Account 304.3, Water Treatment Buildings</u>	
Treatment Plants	55-100
<u>Account 304.51, Offices</u>	
Treatment Plant	60
<u>Account 304.52, Stores, Shop and Garage Buildings</u>	
Operations Facility	45

<u>Life Span Group</u>	<u>Life Span</u>
<u>Account 306.00, Lake, River and Other Intakes</u>	
Intakes	55-75
 <u>Account 320.1, Water Treatment Plant - Treatment Structures</u>	
Filters and Related Structures	55-100

The life span estimates for the several groups above were based primarily on the attained age. The age of these groups is approximately equal to or greater than the estimate typically made for the property group. For the intakes, structures and filters, the expectation is that there will be retirements prior to the final retirement of the plant. Interim survivor curves were estimated for the plant based on prior studies and judgment. The interim survivor curves are as follows:

<u>Account</u>	<u>Interim Survivor Group</u>
304.3 Water Treatment Buildings	55-S1.5
304.52 Stores, Shop and Garage Buildings	60-S0.5
306 Lake, River and Other Intakes	65-R2.5
320.1 Water Treatment Plant - Treatment Structures, Filters and Basin	50-R1.5

The average survivor curves estimated for depreciable groups with numerous similar items were based on statistical analyses, Company policies, and previous estimates made for this and other water companies. For 13 of the mass plant accounts and subaccounts for which survivor curves were estimated, the statistical analysis resulted in good indications of the survivor patterns experienced. Generally, the statistical analyses were the primary bases for the estimates for the following accounts:

	<u>Property Group</u>	<u>Survivor Curve</u>
304.2	Structures and Improvements - Pumping	55-R2
304.51	Office Buildings	45-R2.5
304.53	Miscellaneous Buildings	25-S2
307	Wells and Springs	48-R2
311.2	Electric Pumping Equipment	36-R0.5
311.3	Oil Engine Pumping Equipment	35-R2
320.3	Water Treatment Plant - Chemical Equipment	25-S0.5
330	Distribution Reservoirs and Standpipes	45-R1.5
331	Transmission and Distribution Mains	80-R3
333	Services	60-S2.5
334	Meters	25-S1.5
335	Hydrants	60-R4
341	Transportation Equipment - Trucks	7-L3

The average survivor curves for the remaining depreciable accounts and subaccounts were based on judgment incorporating the size and nature of the property and the previous studies for this and other companies.

The amortization periods selected for general plant Accounts 340, 343, 344, 346 and 347 are discussed in the section, Calculation of Annual and Accrued Amortization.

**PART IV. CALCULATION OF ANNUAL AND
ACCRUED DEPRECIATION**

PART IV. CALCULATION OF ANNUAL AND ACCRUED DEPRECIATION

Group Depreciation Procedures

A group procedure for depreciation is appropriate when considering more than a single item of property. Normally, the items within a group do not have identical service lives, but have lives that are dispersed over a range of time. There are two primary group procedures, namely, average service life and equal life group.

In the average service life procedure, the rate of annual depreciation is based on the average life or average remaining life of the group, and this rate is applied to the surviving balances of the group's cost. A characteristic of this procedure is that the cost of plant retired prior to average life is not fully recouped at the time of retirement, whereas the cost of plant retired subsequent to average life is more than fully recouped. Over the entire life cycle, the portion of cost not recouped prior to average life is balanced by the cost recouped subsequent to average life.

In the equal life group procedure, the property group is subdivided according to service life. That is, each equal life group includes that portion of the property which experiences the life of that specific group. The relative size of each equal life group is determined from the property's life dispersion curve. This procedure eliminates the need to base depreciation on average lives, inasmuch as each group is equivalent to a unit having a single life. The full costs of short-lived units are accrued during their lives, leaving no deferral of accruals required to be added to the annual costs associated with long-lived units. The calculated depreciation for the property group is the summation of the calculated depreciation based on the service life of each equal life group.

Remaining Life Annual Accruals

For the purpose of calculating remaining life accrual rates as of December 31, 2018, the estimated book depreciation reserve for each plant account is allocated among vintages in proportion to the calculated accrued depreciation for the account. Explanations of remaining life accruals and calculated accrued depreciation for the vintages calculated by the average service life procedure and for the vintages calculated by the equal life group procedure follow. The detailed calculations are set forth in the Results of Study section of the report.

Average Service Life Procedure

In the average service life procedure, the remaining life annual accrual for each vintage is determined by dividing future book accruals (original cost less book reserve) by the average remaining life of the vintage. The average remaining life is a directly weighted average derived from the estimated future survivor curve in accordance with the average service life procedure.

The calculated accrued depreciation for each depreciable property group represents that portion of the depreciable cost of the group which would not be allocated to expense through future whole life depreciation accruals if current forecasts of life characteristics are used as the basis for such accruals. The accrued depreciation calculation consists of applying an appropriate ratio to the surviving original cost of each vintage of each account, based upon the attained age and service life. The straight line accrued depreciation ratios are calculated as follows for the average service life procedure:

$$\text{Ratio} = 1 - \frac{\text{Average Remaining Life Expectancy}}{\text{Average Service Life}}$$

Equal Life Group Procedure

In the equal life group procedure, the remaining life annual accrual for each vintage is determined by dividing future book accruals (original cost less book reserve) by the composite remaining life for the surviving original cost of that vintage. The composite remaining life is derived by compositing the individual equal life group remaining lives in accordance with the following equation:

$$\text{Composite Remaining Life} = \frac{\left(\frac{\text{Book Cost}}{\text{Life}} \times \text{Remaining Life} \right)}{\frac{\text{Book Cost}}{\text{Life}}}$$

The book costs and lives of the several equal life groups which are summed in the foregoing equation are defined by the estimated future survivor curve.

Inasmuch as book cost divided by life equals the whole life annual accrual, the foregoing equation reduces to the following form:

$$\text{Composite Remaining Life} = \frac{\sum \text{Whole Life Future Accruals}}{\sum \text{Whole Life Annual Accruals}}$$

or

$$\text{Composite Remaining Life} = \frac{\sum \text{Book Cost} - \text{Calc. Reserve}}{\sum \text{Whole Life Annual Accrual}}$$

The annual accrual rate for each account is equal to the sum of the remaining life annual accruals for all vintages divided by the account's total original cost. The account's "composite remaining life" is calculated by dividing the sum of the future book accruals for all vintages by the sum of the remaining life annual accruals for all vintages.

The calculated accrued depreciation in the equal life group procedure also represents that portion of depreciable cost which will not be allocated to expense through future accruals. However, the calculation is based at the equal life group level rather than the vintage group level, and does not require the use of averages. The equal life group accrued depreciation ratio is calculated as follows:

$$\text{Ratio} = \frac{\text{Remaining Life}}{\text{Average Service Life}}$$

Inasmuch as service life minus remaining life equals age, when averages are not employed, the foregoing equation reduces to:

$$\text{Ratio} = \frac{\text{Age}}{\text{Service Life}}$$

The table on the following page illustrates the procedure for calculating straight line equal life group accrued depreciation, using an Iowa 7-L3 survivor curve and a December 31, 2018 calculation date.

In the table, each equal life group is defined by the age interval shown in columns 1 and 2, which identify the ages at which the first and last retirement of each group occur. The group's designated life, shown in column 3, is the midpoint of the interval. In the calculation, the equal life groups of each vintage are arranged such that the midpoint of each one-year age interval coincides with the calculation date, e.g., December 31 in this case. This enables the calculation of annual accruals which are centered on, or as of, the same date as the calculation of accrued depreciation.

The retirement during each age interval, shown in column 4, is the size of each equal life group. It is derived from the Iowa 7-L3 survivor curve and is the difference between the percents surviving (not shown) at the beginning and end of the age interval.

DETAILED COMPUTATION OF ANNUAL AND ACCRUED FACTORS USING THE EQUAL LIFE GROUP PROCEDURE

INPUT PARAMETERS:

CALCULATION DATE... 12-31-2018
 SURVIVOR CURVE... 7-L3

AGE INTERVAL		RETIREMENTS DURING		GROUP ANNUAL ACCRUAL	YEAR INST	SUMMATION OF ANNUAL ACCRUALS	AVERAGE PERCENT SURVIVING	ANNUAL FACTOR	ACCRUED FACTOR
BEG	END	LIFE	INTERVAL	(5)=(4)/(3)	(6)	(7)	(8)	(9)	(10)
(1)	(2)	(3)	(4)						
0.000	1.000	0.500	0.01037	0.01037000000	2018	16.21234540079	99.996695	0.1621	0.0811
1.000	2.000	1.500	0.43750	0.29166666667	2017	16.05614206745	99.770878	0.1609	0.2414
2.000	3.000	2.500	1.85819	0.74327600000	2016	15.53867073412	98.623035	0.1576	0.3940
3.000	4.000	3.500	4.85443	1.38698000000	2015	14.47354273412	95.266727	0.1519	0.5317
4.000	5.000	4.500	11.39656	2.53256889889	2014	12.51376828967	87.141233	0.1436	0.6462
5.000	6.000	5.500	18.41857	3.34883090909	2013	9.57306839068	72.233668	0.1325	0.7288
6.000	7.000	6.500	19.21018	2.95541230769	2012	6.42094678229	53.419291	0.1202	0.7813
7.000	8.000	7.500	14.70720	1.96096000000	2011	3.96276062845	36.460599	0.1087	0.8153
8.000	9.000	8.500	10.09774	1.18796941176	2010	2.38829592257	24.058129	0.0993	0.8441
9.000	10.000	9.500	7.16571	0.75428526316	2009	1.41716858511	15.426408	0.0919	0.8731
10.000	11.000	10.500	5.14520	0.49001904762	2008	0.79501642972	9.270950	0.0858	0.9009
11.000	12.000	11.500	3.42852	0.29813217391	2007	0.40094081895	4.984086	0.0804	0.9246
12.000	13.000	12.500	1.98274	0.15861920000	2006	0.17256513200	2.278457	0.0757	0.9463
13.000	14.000	13.500	0.92683	0.06865407407	2005	0.05892849496	0.823675	0.0715	0.9653
14.000	15.000	14.500	0.30655	0.02114137931	2004	0.01403076827	0.206985	0.0678	0.9831
15.000	16.000	15.500	0.05216	0.00336516129	2003	0.00177749797	0.027628	0.0643	0.9967
16.000	16.660	16.330	0.00155	0.00009491733	2002	0.00003132272	0.000512	0.0612	1.0000
TOTAL		100.00000							

Each equal life group's whole life annual accrual, shown in column 5, equals the group's size (column 4) divided by its life (column 3), except that for the first age interval, the annual accrual is set equal to the group's size.

Columns 6 through 10 show the derivation of the whole life annual factor and accrued factor for each vintage based on the data developed in the first five columns. The year installed is shown in column 6. For all vintages other than the first year (2018), the summation of annual accruals for each year installed, shown in column 7, is calculated by adding one-half of the group annual accrual (column 5) for that vintage's current age interval plus the group annual accruals for all succeeding age intervals. For example, the figure 16.05614206745 for 2017 equals one-half of 0.29166666667 plus all of the succeeding figures in column 5. Only one-half of the annual accrual for the vintage's current age interval group is included in the summation because the equal life group for that interval expires at the midpoint of the current year.

The summation of annual accruals (column 7) for installations during 2018 is calculated on the basis of an in-service date at the midpoint of twelve months, i.e., six months prior to December 31. Inasmuch as the overall calculation is centered on December 31, 2018, the accrual for 2018 installations (during the twelve months) represents only one-half of one year; one-half of the year prior to December 31 plus one-half year following December 31. For this reason, the first figure in column 7, for vintage 2018, equals the group annual accrual for 2018 plus one-half of the group annual accruals for each of the subsequent years.

The average percent surviving, derived from the Iowa 7-L3 survivor curve, is shown in column 8 for each age interval. The annual factor, shown in column 9, is the result of dividing the summation of annual accruals (column 7) by the average percent surviving (column 8).

The accrued depreciation factor, shown in column 10, equals the annual factor multiplied by the age of the group as of December 31, 2018.

CALCULATION OF ANNUAL AND ACCRUED AMORTIZATION

Amortization, as defined in the Uniform System of Accounts, is the gradual extinguishment of an amount in an account by distributing such amount over a fixed period, over the life of the asset or liability to which it applies, or over the period during which it is anticipated the benefit will be realized. Normally, the distribution of the amount is in equal amounts to each year of the amortization period.

The calculation of annual and accrued amortization requires the selection of an amortization period. The amortization periods used in this report were based on judgment which incorporated a consideration of the period during which the assets will

render most of their service, the amortization periods and service lives used by other utilities, and the service life estimates previously used for the asset under depreciation accounting.

Amortization accounting is appropriate for certain General Plant accounts that represent numerous units of property, but a very small portion of depreciable utility plant in service. The accounts and their amortization periods are as follows:

<u>Account</u>	<u>Amortization Period, Years</u>
340 Office Furniture and Equipment	
Computers and Software	5
Software - Large	8
Office Furniture and Equipment	15
343.1 Shop and Garage Equipment	20
343.2 Tools and Work Equipment	20
344 Laboratory Equipment	15
346 Communication Equipment	10
347 Miscellaneous Equipment	15

For the purpose of calculating annual amortization amounts as of December 31, 2018, the book depreciation reserve for each plant account or subaccount is assigned or allocated to vintages. The book reserve assigned to vintages with an age greater than the amortization period is equal to the vintage's original cost. The remaining book reserve is allocated among vintages with an age less than the amortization period in proportion to the calculated accrued amortization. The calculated accrued amortization is equal to the original cost multiplied by the ratio of the vintage's age to its amortization period. The annual amortization amount is determined by dividing the future amortizations (original cost less allocated book reserve) by the remaining period of amortization for the vintage.

AMORTIZATION OF NET SALVAGE

Experienced salvage is incorporated in the results of the study, as it was reported on the Company's books and records for the period January 1, 2014 through December 31, 2017. The data for 2018 are based on estimated experience. Results of the calculations are shown in Table 4.

Net salvage experienced during the five-year period is presented in this manner to determine the amount of negative net salvage to be amortized for book purposes. In developing the amount to be amortized, the data for the accounts which experienced positive net salvage have been netted with those for accounts which experienced negative net salvage.

In order to be consistent with this manner of recognizing salvage, no adjustments for salvage were made to the annual accruals and accrued depreciation calculated for each individual account. There were no exclusions from the 2014 through 2018 net salvage accrual.

PART V. RESULTS OF STUDY

PART V. RESULTS OF STUDY

DESCRIPTION OF SUMMARY TABULATIONS

Tables 1 through 4 presented on pages V-4 through V-9 summarize the results of the depreciation study as of December 31, 2018. Table 1 sets forth, by depreciable group, the estimated survivor curve, original cost, book depreciation reserve as of December 31, 2018, future book accruals, calculated annual accrual amount and rate, and composite remaining life for plant in service. Table 2 presents the bringforward of the book reserve to December 31, 2018. Table 3 sets forth the calculation of the depreciation accruals for the twelve months ended December 31, 2018. Table 4 presents the annual amortization of experienced and estimated net salvage based on the period 2014 through 2018.

DESCRIPTION OF DETAILED TABULATIONS

Supporting statistical data for the estimates of average service lives and survivor curves, the annual depreciation calculations, and salvage and cost of removal for the years 2014-2018 are presented in three sections.

The section beginning on page VI-1 sets forth, for each depreciable group analyzed by the retirement rate method, a chart depicting the original and estimated survivor curves followed by a tabular presentation of the original life table(s) plotted on the chart. A cumulative summary, by year installed, for utility plant and the supporting data for the original cost depreciation calculations are presented in the section beginning on page VII-2. The tabulations of experienced and estimated net salvage by year by account for the five-year period, 2014-2018, are presented in the section beginning on page VIII-2.

In the section VI, the survivor curves estimated for the depreciable groups are shown as dark smooth curves on the charts. Each smooth survivor curve is denoted by a numeral followed by the type curve designation. The numeral used is the average life derived from the entire curve from 100 percent to zero percent surviving. In cases where only a segment of the estimated curve is used in the depreciation calculation, the numeral used for identification purposes is not a designation of the average life of the group. The titles of the charts indicate the group, the symbol used to plot the points of the original life table, and the experience and placement bands of the life tables which were plotted. The experience band indicates the range of years for which the retirements were used to develop the stub survivor curve. The placements indicate, for the related experience band, the range of years of installations which appear in the experience.

The tables of the calculated annual depreciation related to original cost are presented in section VII and indicate the estimated average survivor curves used in the calculations. The tables set forth, for each installation year, the original cost, calculated accrued depreciation, allocated book reserve, future book accruals, remaining life expectancy and the calculated annual accrual.

Detailed tabulations setting forth the cost of removal and salvage amounts, by plant account for each year, are presented beginning on page VIII-2. The total salvage and removal costs, by year, were used to calculate the five-year net salvage amortization presented in Table 4 on page V-9.



SUEZ WATER PENNSYLVANIA, INC.

TABLE 1. SUMMARY OF ESTIMATED SURVIVOR CURVES, ORIGINAL COST, BOOK RESERVE AND CALCULATED ANNUAL DEPRECIATION ACCRUALS RELATED TO WATER PLANT AS OF DECEMBER 31, 2018

DEPRECIABLE GROUP (1)	SURVIVOR CURVE (2)	ORIGINAL COST (3)	BOOK RESERVE (4)	FUTURE ACCRUALS (5)	ANNUAL		COMPOSITE REMAINING LIFE (8)	
					ACCRUAL AMOUNT (6)	ACCRUAL RATE (7)=(6)/(3)		
INTANGIBLE PLANT								
301.00	ORGANIZATION	66,399.00	152,179					
302.00	FRANCHISES AND CONSENTS	64,265.56						
303.00	MISCELLANEOUS INTANGIBLE PLANT	4,429,099.01	(137,089)					
	TOTAL INTANGIBLE PLANT	4,559,763.57	15,090					
DEPRECIABLE PLANT								
304.20	STRUCTURES AND IMPROVEMENTS PUMPING	55-R2	3,721,078.15	953,370	2,767,708	84,585	2.27	32.7
304.30	WATER TREATMENT PLANT							
	BLOOMSBURG TREATMENT PLANT	55-S1.5 *	181,380.86	114,065	67,316	8,495	4.68	7.9
	BLOOMSBURG TREATMENT PLANT - NEW	55-S1.5 *	5,829,778.36	300,745	5,529,033	134,920	2.31	41.0
	SIXTH STREET PLANT	55-S1.5 *	4,160,026.78	1,596,467	2,563,560	114,870	2.76	22.3
	RICHARD C. RABOLD	55-S1.5 *	1,619,181.24	814,992	804,189	40,994	2.53	19.6
	MARKET STREET	55-S1.5 *	101,359.72	78,890	22,470	4,332	4.27	5.2
	OLD HUMMELSTOWN PLANT	55-S1.5 *	86,583.70	86,584	0	0		
	HUMMELSTOWN MEMBRANE PLANT	55-S1.5 *	4,410,545.60	1,125,108	3,285,438	105,380	2.39	31.2
	OTHER TREATMENT FACILITIES	50-R3	3,093,200.07	489,251	2,603,949	70,973	2.29	36.7
	TOTAL WATER TREATMENT PLANT		19,482,056.33	4,606,102	14,875,955	479,964	2.46	31.0
304.40	TRANSMISSION AND DISTRIBUTION	40-R3	419,271.11	18,681	400,590	12,332	2.94	32.5
304.51	OFFICES							
	BLOOMSBURG TREATMENT PLANT	55-S1.5 *	9,033,472.21	472,425	8,561,047	208,767	2.31	41.0
	OTHER OFFICES	45-R2.5	900,590.27	226,145	674,445	23,663	2.63	28.5
	TOTAL OFFICES		9,934,062.48	698,570	9,235,492	232,430	2.34	39.7
304.52	STORES, SHOP AND GARAGE							
	SUMMIT VIEW MAINTENANCE BUILDING	60-S0.5 *	1,376,665.83	504,912	871,754	41,448	3.01	21.0
	OTHER MAINTENANCE BUILDINGS	35-S2.5	265,543.62	107,787	157,757	9,186	3.46	17.2
	TOTAL ACCOUNT STORES, SHOP AND GARAGE		1,642,209.45	612,699	1,029,511	50,634	3.08	20.3
304.53	MISCELLANEOUS	25-S2	350,989.27	175,842	175,147	16,309	4.65	10.7
	TOTAL STRUCTURES AND IMPROVEMENTS		35,549,666.79	7,065,264	28,484,403	876,254	2.46	32.5
305.00	COLLECTING AND IMPOUNDING RESERVOIRS	65-S1	434,632.39	107,698	326,934	8,166	1.88	40.0
306.00	LAKE, RIVER AND OTHER INTAKES							
	ROCKVILLE INTAKE	65-R2.5 *	1,519,927.27	727,387	792,540	33,021	2.17	24.0
	HUMMELSTOWN INTAKE	65-R2.5 *	1,335,191.80	329,740	1,005,452	28,259	2.12	35.6
	OTHER INTAKES	50-S1	509,724.53	82,321	427,404	12,509	2.45	34.2
	TOTAL LAKE, RIVER AND OTHER INTAKES		3,364,843.60	1,139,448	2,225,396	73,789	2.19	30.2



SUEZ WATER PENNSYLVANIA, INC.

TABLE 1. SUMMARY OF ESTIMATED SURVIVOR CURVES, ORIGINAL COST, BOOK RESERVE AND CALCULATED ANNUAL DEPRECIATION ACCRUALS RELATED TO WATER PLANT AS OF DECEMBER 31, 2018

	DEPRECIABLE GROUP (1)	SURVIVOR CURVE (2)	ORIGINAL COST (3)	BOOK RESERVE (4)	FUTURE ACCRUALS (5)	ANNUAL		COMPOSITE REMAINING LIFE (8)
						ACCRUAL AMOUNT (6)	ACCRUAL RATE (7)=(6)/(3)	
307.00	WELLS AND SPRINGS	48-R2	1,028,041.81	523,039	505,003	18,050	1.76	28.0
308.00	INFILTRATION GALLERIES AND TUNNELS	40-R2.5	13,358.04	2,447	10,911	410	3.07	26.6
	PUMPING EQUIPMENT							
311.20	ELECTRIC PUMPING EQUIPMENT	36-R0.5	14,873,205.99	4,918,291	9,954,915	524,804	3.53	19.0
311.30	OIL ENGINE PUMPING EQUIPMENT	35-R2	314,155.59	250,830	63,326	3,978	1.27	15.9
	TOTAL PUMPING EQUIPMENT		15,187,361.58	5,169,121	10,018,241	528,782	3.48	18.9
	WATER TREATMENT PLANT							
320.10	STRUCTURES AND IMPROVEMENTS							
	BLOOMSBURG TREATMENT PLANT	50-R1.5	338,354.21	324,762	13,592	1,533	0.45	8.9
	BLOOMSBURG TREATMENT PLANT - NEW	50-R1.5	13,501,911.63	1,300,866	12,201,046	394,345	2.92	30.9
	SIXTH STREET PLANT	50-R1.5	10,575,213.95	5,953,105	4,622,109	216,981	2.05	21.3
	RICHARD C. RABOLD	50-R1.5	1,756,585.15	1,212,379	544,206	27,853	1.59	19.5
	MARKET STREET	50-R1.5	192,621.85	166,367	26,255	4,876	2.53	5.4
	OLD HUMMELSTOWN PLANT	50-R1.5	858,433.64	858,434	0	0	-	-
	HUMMELSTOWN MEMBRANE PLANT	50-R1.5	9,469,382.38	3,733,572	5,735,810	200,609	2.12	28.6
	OTHER TREATMENT FACILITIES	40-R1.5	892,814.19	489,352	403,462	16,532	1.85	24.4
	TOTAL STRUCTURES AND IMPROVEMENTS		37,585,317.00	14,038,837	23,546,480	862,729	2.30	27.3
320.20	PAINTING	10-SQ	447,524.82	223,414	224,111	39,265	8.77	5.7
320.30	CHEMICAL EQUIPMENT	25-S0.5	6,738,955.58	829,671	5,909,285	496,009	7.36	11.9
	TOTAL WATER TREATMENT PLANT		44,771,797.40	15,091,922	29,679,876	1,398,003	3.12	21.2
330.00	DISTRIBUTION RESERVOIRS AND STANDPIPES	45-R1.5	11,568,980.25	3,471,829	8,097,151	308,192	2.66	26.3
331.00	TRANSMISSION AND DISTRIBUTION MAINS	80-R3	164,076,801.98	15,943,779	148,133,023	2,602,037	1.59	56.9
333.00	SERVICES	60-S2.5	40,291,797.42	10,072,704	30,219,093	725,847	1.80	41.6
334.00	METERS	25-S1.5	20,280,773.41	6,000,359	14,280,414	919,115	4.53	15.5
335.00	HYDRANTS	60-R4	8,014,302.41	2,449,088	5,565,214	134,146	1.67	41.5
339.00	OTHER PLANT AND MISCELLANEOUS EQUIPMENT	40-S2	539,255.49	378,782	160,473	8,564	1.59	18.7
	OFFICE FURNITURE AND EQUIPMENT							
340.10	COMPUTERS AND SOFTWARE	5-SQ	3,298,776.11	2,998,183	300,593	206,489	6.26	1.5
340.11	SOFTWARE - LARGE	8-SQ	3,665,579.00	3,394,538	271,041	265,327	7.24	1.0
340.20	FURNITURE	15-SQ	659,446.10	270,825	388,621	33,071	5.01	11.8
	TOTAL OFFICE FURNITURE AND EQUIPMENT		7,623,801.21	6,663,546	960,255	504,887	6.62	1.9
341.00	TRANSPORTATION EQUIPMENT - TRUCKS	7-L3	1,057.45	275	782	254	24.02	3.1
	TOOLS, SHOP AND GARAGE EQUIPMENT							
343.10	SHOP AND GARAGE EQUIPMENT	20-SQ	1,140,592.94	354,566	786,027	48,561	4.26	16.2
343.20	TOOLS AND WORK EQUIPMENT	20-SQ	2,064,201.51	676,230	1,387,972	105,984	5.13	13.1
	TOTAL TOOLS SHOP AND GARAGE EQUIPMENT		3,204,794.45	1,030,796	2,173,999	154,545	4.82	14.1



SUEZ WATER PENNSYLVANIA, INC.

TABLE 1. SUMMARY OF ESTIMATED SURVIVOR CURVES, ORIGINAL COST, BOOK RESERVE AND CALCULATED ANNUAL DEPRECIATION ACCRUALS RELATED TO WATER PLANT AS OF DECEMBER 31, 2018

DEPRECIABLE GROUP (1)	SURVIVOR CURVE (2)	ORIGINAL COST (3)	BOOK RESERVE (4)	FUTURE ACCRUALS (5)	ANNUAL		COMPOSITE REMAINING LIFE (8)	
					ACCRUAL AMOUNT (6)	ACCRUAL RATE (7)=(6)/(3)		
344.00	LABORATORY EQUIPMENT	15-SQ	129,279.71	90,276	39,004	4,778	3.70	8.2
346.00	COMMUNICATION EQUIPMENT	10-SQ	6,925,959.87	3,372,123	3,553,837	573,126	8.28	6.2
347.00	MISCELLANEOUS EQUIPMENT	15-SQ	147,854.10	29,434	118,420	10,948	7.40	10.8
	TOTAL DEPRECIABLE PLANT		363,154,359.36	78,601,930	284,552,429	8,849,893	2.44	32.2
	AMORTIZATION OF NET SALVAGE					265,804		
	TOTAL UTILITY PLANT IN SERVICE		367,714,122.93	78,617,020	284,552,429	9,115,697		

* Life Span Procedure was used. Curve shown is Interim Survivor Curve.



SUEZ WATER PENNSYLVANIA, INC.

TABLE 2. BRINGFORWARD TO DECEMBER 31, 2018 OF BOOK RESERVE AS OF DECEMBER 31, 2017

ACCOUNT (1)	BOOK RESERVE AS OF DECEMBER 31, 2017 (2)	+	PROJECTED DEPRECIATION ACCRUALS (3)	-	PROJECTED RETIREMENTS (4)	-	PROJECTED COST OF REMOVAL (5)	+	PROJECTED GROSS SALVAGE (6)	+	ADJUSTMENTS (7)	=	PROJECTED BOOK RESERVE AS OF DECEMBER 31, 2018 (8)	BOOK RESERVE AS A PERCENT OF ORIGINAL COST (9)
301.00	145,805		6,374										152,179	229.19
303.00	(137,089)												(137,089)	(3.10)
304.20	868,598		84,772										953,370	25.62
304.30	4,117,550		488,552										4,606,102	23.64
304.40	8,147		10,534										18,681	4.46
304.51	493,116		232,654		20,800		6,400						698,570	7.03
304.52	612,428		47,871		36,400		11,200						612,699	37.31
304.53	174,047		11,995		7,800		2,400						175,842	50.10
305.00	99,179		8,519										107,698	24.78
306.00	1,064,850		74,598										1,139,448	33.86
307.00	500,275		22,764										523,039	50.88
308.00	2,022		425										2,447	18.32
311.20	4,499,502		552,289		90,000		43,500						4,918,291	33.07
311.30	246,715		4,115										250,830	79.84
320.10	13,170,470		898,367		25,000		5,000						14,038,837	37.35
320.20	184,088		39,326										223,414	49.92
320.30	354,026		540,645		50,000		15,000						829,671	12.31
330.00	3,358,961		267,868		100,000		55,000						3,471,829	30.01
331.00	13,729,544		2,597,985		280,000		103,750						15,943,779	9.72
333.00	9,356,668		739,836		22,000		1,800						10,072,704	25.00
334.00	5,155,535		932,824		70,000		18,000						6,000,359	29.59
335.00	2,324,418		130,070		5,000		400						2,449,088	30.56
339.00	370,046		8,736										378,782	70.24
340.10	2,452,767		707,784		162,368								2,998,183	90.89
340.11	2,875,859		518,679										3,394,538	92.61
340.20	237,976		32,849										270,825	41.07
341.00	0		275										275	26.01
343.10	317,779		36,787										354,566	31.09
343.20	688,280		102,266		114,316								676,230	32.76
344.00	96,828		4,612		11,164								90,276	69.83
346.00	2,894,633		586,579		106,089		3,000						3,372,123	48.73
347.00	18,345		11,089										29,434	19.91
TOTAL	70,281,368		9,702,039		1,100,936		265,450		0		0		78,617,020	



SUEZ WATER PENNSYLVANIA, INC.

TABLE 3. CALCULATION OF DEPRECIATION ACCRUALS FOR THE TWELVE MONTHS ENDED DECEMBER 31, 2018

ACCOUNT	ORIGINAL COST AS OF DECEMBER 31, 2017	ACQUISITIONS	ADJUSTED ORIGINAL COST AS OF DECEMBER 31, 2017	ORIGINAL COST AS OF DECEMBER 31, 2018	ACCRUAL RATE	AVERAGE ACCRUAL	AMORTIZATION OF NET SALVAGE	PROJECTED DEPRECIATION ACCRUALS
(1)	(2)	(3)	(4)=(2)+(3)	(5)	(6)	(7)=(((4)+(5))/2)*(6)	(8)	(9)=(7)+(8)
301.00	66,399.00		66,399.00	66,399.00	-	0	0	0
302.00	64,265.56		64,265.56	64,265.56	-	0	0	0
303.00	4,366,092.40		4,366,092.40	4,429,099.01	-	0	6,374	6,374
304.20	3,721,078.15		3,721,078.15	3,721,078.15	2.33	86,701	(1,929)	84,772
304.30	19,476,430.74		19,476,430.74	19,482,056.33	2.49	485,033	3,519	488,552
304.40	282,963.06		282,963.06	419,271.11	3.00	10,534	0	10,534
304.51	9,765,842.65		9,765,842.65	9,934,062.48	2.35	231,474	1,180	232,654
304.52	1,570,598.14		1,570,598.14	1,642,209.45	2.98	47,871	0	47,871
304.53	352,038.57		352,038.57	350,989.27	4.56	16,029	(4,034)	11,995
305.00	434,632.39		434,632.39	434,632.39	1.96	8,519	0	8,519
306.00	3,364,843.60		3,364,843.60	3,364,843.60	2.21	74,363	235	74,598
307.00	1,028,041.81		1,028,041.81	1,028,041.81	1.81	18,608	4,156	22,764
308.00	13,358.04		13,358.04	13,358.04	3.18	425	0	425
311.20	14,091,239.53		14,091,239.53	14,873,205.99	3.74	541,635	10,654	552,289
311.30	314,155.59		314,155.59	314,155.59	1.31	4,115	0	4,115
320.10	37,509,056.38		37,509,056.38	37,585,317.00	2.38	893,623	4,744	898,367
320.20	447,524.82		447,524.82	447,524.82	8.78	39,293	33	39,326
320.30	6,563,931.98		6,563,931.98	6,738,955.58	7.90	525,464	15,181	540,645
330.00	9,806,864.93		9,806,864.93	11,568,980.25	2.46	262,923	4,945	267,868
331.00	143,623,963.03		143,623,963.03	164,076,801.98	1.62	2,492,376	105,609	2,597,985
333.00	39,198,130.39		39,198,130.39	40,291,797.42	1.81	719,384	20,452	739,836
334.00	18,835,239.43		18,835,239.43	20,280,773.41	4.60	899,668	33,156	932,824
335.00	7,696,446.42		7,696,446.42	8,014,302.41	1.67	131,185	(1,115)	130,070
339.00	539,255.49		539,255.49	539,255.49	1.62	8,736	0	8,736
340.10	3,461,144.25		3,461,144.25	3,298,776.11	20.94	707,764	20	707,784
340.11	3,665,579.00		3,665,579.00	3,665,579.00	14.15	518,679	0	518,679
340.20	659,446.10		659,446.10	659,446.10	4.98	32,840	9	32,849
341.00	1,057.45		1,057.45	1,057.45	26.01	275	0	275
343.10	770,429.12		770,429.12	1,140,592.94	3.85	36,787	0	36,787
343.20	2,070,505.75		2,070,505.75	2,064,201.51	4.95	102,334	(68)	102,266
344.00	140,443.25		140,443.25	129,279.71	3.42	4,612	0	4,612
346.00	6,834,027.66		6,834,027.66	6,925,959.87	8.51	585,487	1,092	586,579
347.00	147,854.10		147,854.10	147,854.10	7.50	11,089	0	11,089
TOTAL	340,882,878.78	0.00	340,882,878.78	367,714,122.93		9,497,827	204,213	9,702,039



SUEZ WATER PENNSYLVANIA, INC.

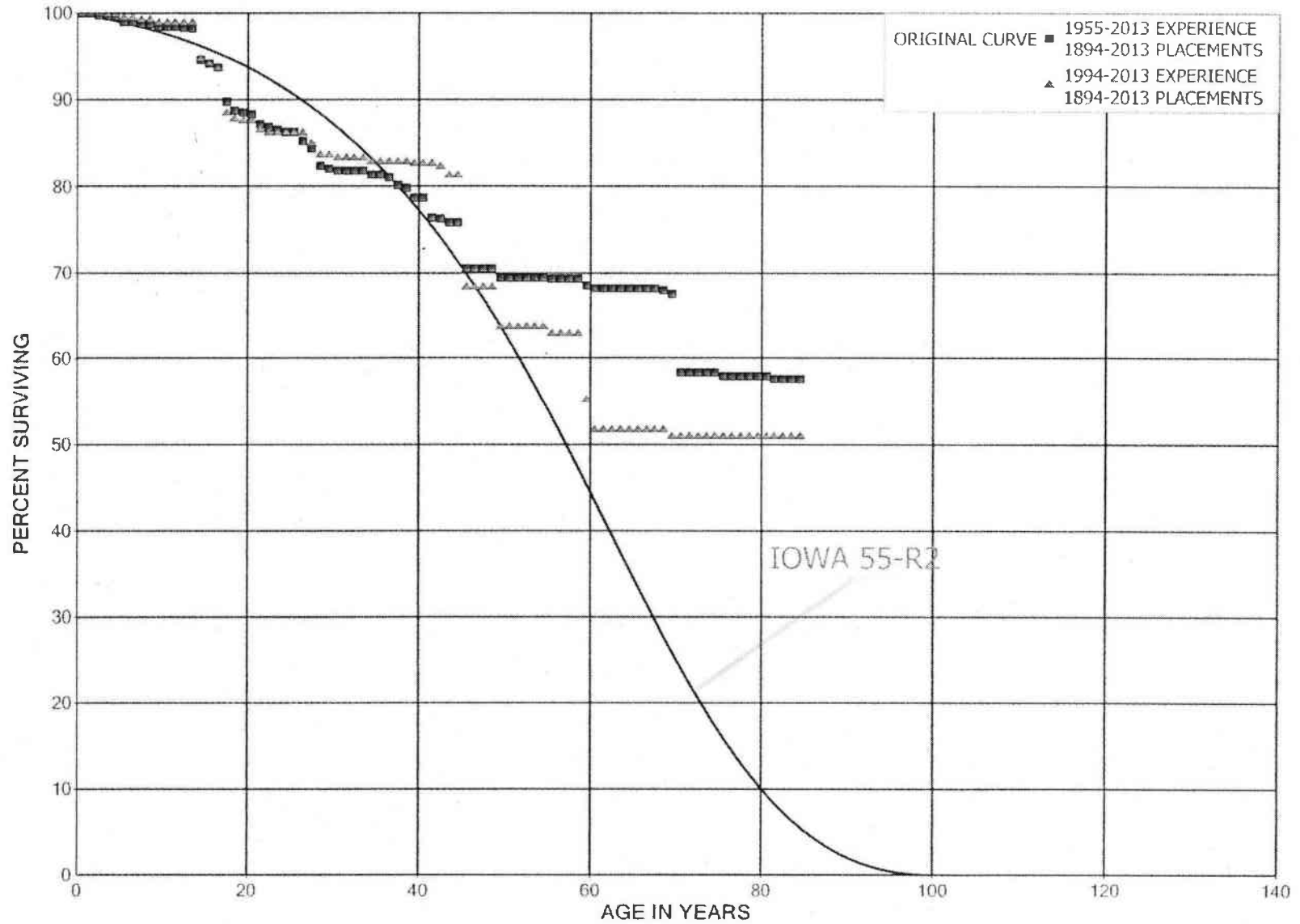
TABLE 4. AMORTIZATION OF EXPERIENCED AND ESTIMATED NET SALVAGE

ACCOUNT (1)	2014		2015		2016		2017		2018		NET SALVAGE (12)	SALVAGE ACCRUAL (13)=(12)/5
	GROSS SALVAGE (2)	COST OF REMOVAL (3)	GROSS SALVAGE (4)	COST OF REMOVAL (5)	GROSS SALVAGE (6)	COST OF REMOVAL (7)	GROSS SALVAGE (8)	COST OF REMOVAL (9)	GROSS SALVAGE (10)	COST OF REMOVAL (11)		
303.00				31,870							(31,870)	(6,374)
304.20		250		991		392		82			(1,715)	(343)
304.30		815		6,690		3,491		8,380			(19,376)	(3,875)
304.51										6,400	(6,400)	(1,280)
304.52										11,200	(11,200)	(2,240)
304.53										2,400	(2,400)	(480)
306.00		1,173									(1,173)	(235)
307.00		18,328		2,450							(20,778)	(4,156)
311.20		11,306		15,818		19,218		3,725		43,500	(93,567)	(18,713)
320.10		22,903		278		22		501		5,000	(28,704)	(5,741)
320.30		250		28,976		23,239		23,442		15,000	(90,907)	(18,181)
330.00				189		13,273		11,262		55,000	(79,724)	(15,945)
331.00		22,514		64,378		194,519		237,069		103,750	(622,230)	(124,446)
333.00		7,672		11,225		33,371		42,620		1,800	(96,688)	(19,338)
334.00	47,217	156,296	14,105	202,894	5,351	(78,539)	13,554	(6,258)		18,000	(212,167)	(42,433)
335.00	(409)	495	4,272	2,330	2,453	3,611	903	2,742		400	(2,360)	(472)
340.10						98					(98)	(20)
340.20						47					(47)	(9)
346.00				2,032		786		1,796		3,000	(7,615)	(1,523)
Total	46,808	242,002	18,377	370,120	7,803	213,529	14,457	325,362	0	265,450	(1,329,019)	(265,804)

PART VI. SERVICE LIFE STATISTICS



SUEZ WATER PENNSYLVANIA, INC.
ACCOUNT 304.2 STRUCTURES AND IMPROVEMENTS - PUMPING
ORIGINAL AND SMOOTH SURVIVOR CURVES



SUEZ WATER PENNSYLVANIA, INC.

ACCOUNT 304.2 STRUCTURES AND IMPROVEMENTS - PUMPING

ORIGINAL LIFE TABLE

PLACEMENT BAND 1894-2013

EXPERIENCE BAND 1955-2013

AGE AT BEGIN OF INTERVAL	EXPOSURES AT BEGINNING OF AGE INTERVAL	RETIREMENTS DURING AGE INTERVAL	RETMT RATIO	SURV RATIO	PCT SURV BEGIN OF INTERVAL
0.0	2,643,532		0.0000	1.0000	100.00
0.5	2,131,733	1,501	0.0007	0.9993	100.00
1.5	2,076,253	3,580	0.0017	0.9983	99.93
2.5	1,928,075	1,700	0.0009	0.9991	99.76
3.5	1,622,494	1,510	0.0009	0.9991	99.67
4.5	1,085,862	6,541	0.0060	0.9940	99.58
5.5	1,072,876		0.0000	1.0000	98.98
6.5	1,051,949	2,686	0.0026	0.9974	98.98
7.5	1,771,782	889	0.0005	0.9995	98.72
8.5	1,751,777	4,883	0.0028	0.9972	98.67
9.5	1,748,631		0.0000	1.0000	98.40
10.5	1,748,858		0.0000	1.0000	98.40
11.5	1,748,360	1,788	0.0010	0.9990	98.40
12.5	1,728,244	1,867	0.0011	0.9989	98.30
13.5	1,728,067	65,425	0.0379	0.9621	98.19
14.5	1,664,514	8,000	0.0048	0.9952	94.48
15.5	924,500	4,000	0.0043	0.9957	94.02
16.5	783,968	32,519	0.0415	0.9585	93.61
17.5	706,346	8,321	0.0118	0.9882	89.73
18.5	688,811	1,000	0.0015	0.9985	88.67
19.5	677,651	1,896	0.0028	0.9972	88.55
20.5	672,129	8,409	0.0125	0.9875	88.30
21.5	663,112	2,500	0.0038	0.9962	87.19
22.5	658,653	2,969	0.0045	0.9955	86.86
23.5	556,022	1,335	0.0024	0.9976	86.47
24.5	530,165	50	0.0001	0.9999	86.26
25.5	388,273	4,213	0.0108	0.9892	86.26
26.5	407,412	4,675	0.0115	0.9885	85.32
27.5	322,996	7,393	0.0229	0.9771	84.34
28.5	312,108	1,246	0.0040	0.9960	82.41
29.5	250,343	840	0.0034	0.9966	82.08
30.5	237,728		0.0000	1.0000	81.81
31.5	232,507		0.0000	1.0000	81.81
32.5	225,094		0.0000	1.0000	81.81
33.5	216,866	965	0.0045	0.9955	81.81
34.5	215,901		0.0000	1.0000	81.44
35.5	215,630	1,140	0.0053	0.9947	81.44
36.5	214,417	2,305	0.0107	0.9893	81.01
37.5	163,397	669	0.0041	0.9959	80.14
38.5	160,543	2,241	0.0140	0.9860	79.81

SUEZ WATER PENNSYLVANIA, INC.

ACCOUNT 304.2 STRUCTURES AND IMPROVEMENTS - PUMPING

ORIGINAL LIFE TABLE, CONT.

PLACEMENT BAND 1894-2013

EXPERIENCE BAND 1955-2013

AGE AT BEGIN OF INTERVAL	EXPOSURES AT BEGINNING OF AGE INTERVAL	RETIREMENTS DURING AGE INTERVAL	RETMT RATIO	SURV RATIO	PCT SURV BEGIN OF INTERVAL
39.5	143,272		0.0000	1.0000	78.70
40.5	131,733	3,776	0.0287	0.9713	78.70
41.5	114,051	198	0.0017	0.9983	76.44
42.5	113,031	670	0.0059	0.9941	76.31
43.5	106,499		0.0000	1.0000	75.86
44.5	99,575	7,091	0.0712	0.9288	75.86
45.5	107,365		0.0000	1.0000	70.46
46.5	116,743		0.0000	1.0000	70.46
47.5	110,871		0.0000	1.0000	70.46
48.5	118,333	1,720	0.0145	0.9855	70.46
49.5	106,696		0.0000	1.0000	69.43
50.5	106,696		0.0000	1.0000	69.43
51.5	106,365		0.0000	1.0000	69.43
52.5	104,774	19	0.0002	0.9998	69.43
53.5	104,601		0.0000	1.0000	69.42
54.5	114,078	150	0.0013	0.9987	69.42
55.5	113,296		0.0000	1.0000	69.33
56.5	112,734		0.0000	1.0000	69.33
57.5	112,580		0.0000	1.0000	69.33
58.5	115,814	1,300	0.0112	0.9888	69.33
59.5	114,299	600	0.0052	0.9948	68.55
60.5	117,649		0.0000	1.0000	68.19
61.5	116,858		0.0000	1.0000	68.19
62.5	116,858	20	0.0002	0.9998	68.19
63.5	113,858		0.0000	1.0000	68.18
64.5	113,858		0.0000	1.0000	68.18
65.5	113,858		0.0000	1.0000	68.18
66.5	113,858		0.0000	1.0000	68.18
67.5	113,431	399	0.0035	0.9965	68.18
68.5	111,294	685	0.0062	0.9938	67.94
69.5	110,382	14,881	0.1348	0.8652	67.52
70.5	95,501		0.0000	1.0000	58.42
71.5	95,501		0.0000	1.0000	58.42
72.5	95,438		0.0000	1.0000	58.42
73.5	93,566		0.0000	1.0000	58.42
74.5	93,566	773	0.0083	0.9917	58.42
75.5	92,793		0.0000	1.0000	57.94
76.5	92,328		0.0000	1.0000	57.94
77.5	92,328		0.0000	1.0000	57.94
78.5	92,328		0.0000	1.0000	57.94

SUEZ WATER PENNSYLVANIA, INC.

ACCOUNT 304.2 STRUCTURES AND IMPROVEMENTS - PUMPING

ORIGINAL LIFE TABLE, CONT.

PLACEMENT BAND 1894-2013			EXPERIENCE BAND 1955-2013			
AGE AT BEGIN OF INTERVAL	EXPOSURES AT BEGINNING OF AGE INTERVAL	RETIREMENTS DURING AGE INTERVAL	RETMT RATIO	SURV RATIO	PCT SURV BEGIN OF INTERVAL	
79.5	92,328		0.0000	1.0000	57.94	
80.5	92,286	555	0.0060	0.9940	57.94	
81.5	91,731		0.0000	1.0000	57.59	
82.5	91,521		0.0000	1.0000	57.59	
83.5	91,521		0.0000	1.0000	57.59	
84.5	91,521	250	0.0027	0.9973	57.59	
85.5	59,807		0.0000	1.0000	57.43	
86.5	54,325		0.0000	1.0000	57.43	
87.5	54,225	100	0.0018	0.9982	57.43	
88.5	53,140		0.0000	1.0000	57.32	
89.5	53,140	4	0.0001	0.9999	57.32	
90.5	46,445		0.0000	1.0000	57.32	
91.5	46,445		0.0000	1.0000	57.32	
92.5	41,945		0.0000	1.0000	57.32	
93.5	41,945		0.0000	1.0000	57.32	
94.5	41,945		0.0000	1.0000	57.32	
95.5	41,945		0.0000	1.0000	57.32	
96.5	41,945		0.0000	1.0000	57.32	
97.5	41,945		0.0000	1.0000	57.32	
98.5	41,945		0.0000	1.0000	57.32	
99.5	41,945		0.0000	1.0000	57.32	
100.5	41,945		0.0000	1.0000	57.32	
101.5	41,945		0.0000	1.0000	57.32	
102.5	41,945		0.0000	1.0000	57.32	
103.5	41,945		0.0000	1.0000	57.32	
104.5	41,945		0.0000	1.0000	57.32	
105.5	26,545		0.0000	1.0000	57.32	
106.5	26,545		0.0000	1.0000	57.32	
107.5	18,740		0.0000	1.0000	57.32	
108.5	18,740		0.0000	1.0000	57.32	
109.5	18,740		0.0000	1.0000	57.32	
110.5	18,740		0.0000	1.0000	57.32	
111.5	18,740		0.0000	1.0000	57.32	
112.5	18,740		0.0000	1.0000	57.32	
113.5	7,180		0.0000	1.0000	57.32	
114.5	7,180		0.0000	1.0000	57.32	
115.5	7,180		0.0000	1.0000	57.32	
116.5	7,180		0.0000	1.0000	57.32	
117.5	3,946		0.0000	1.0000	57.32	
118.5	3,946		0.0000	1.0000	57.32	
119.5					57.32	

SUEZ WATER PENNSYLVANIA, INC.

ACCOUNT 304.2 STRUCTURES AND IMPROVEMENTS - PUMPING

ORIGINAL LIFE TABLE

PLACEMENT BAND 1894-2013

EXPERIENCE BAND 1994-2013

AGE AT BEGIN OF INTERVAL	EXPOSURES AT BEGINNING OF AGE INTERVAL	RETIREMENTS DURING AGE INTERVAL	RETMT RATIO	SURV RATIO	PCT SURV BEGIN OF INTERVAL
0.0	1,966,216		0.0000	1.0000	100.00
0.5	1,455,912	1,501	0.0010	0.9990	100.00
1.5	1,399,783		0.0000	1.0000	99.90
2.5	1,249,361	200	0.0002	0.9998	99.90
3.5	1,047,869		0.0000	1.0000	99.88
4.5	556,834	2,500	0.0045	0.9955	99.88
5.5	693,166		0.0000	1.0000	99.43
6.5	678,139	2,000	0.0029	0.9971	99.43
7.5	1,485,086		0.0000	1.0000	99.14
8.5	1,469,244	4,883	0.0033	0.9967	99.14
9.5	1,527,008		0.0000	1.0000	98.81
10.5	1,539,623		0.0000	1.0000	98.81
11.5	1,549,397		0.0000	1.0000	98.81
12.5	1,538,481	300	0.0002	0.9998	98.81
13.5	1,537,568	65,425	0.0426	0.9574	98.79
14.5	1,472,143	8,000	0.0054	0.9946	94.59
15.5	732,401	4,000	0.0055	0.9945	94.07
16.5	590,020	32,305	0.0548	0.9452	93.56
17.5	560,915	4,635	0.0083	0.9917	88.44
18.5	549,299	1,000	0.0018	0.9982	87.71
19.5	553,168	100	0.0002	0.9998	87.55
20.5	563,892	6,613	0.0117	0.9883	87.53
21.5	571,186	2,500	0.0044	0.9956	86.50
22.5	567,548		0.0000	1.0000	86.13
23.5	473,952		0.0000	1.0000	86.13
24.5	457,334		0.0000	1.0000	86.13
25.5	315,878		0.0000	1.0000	86.13
26.5	315,431	4,473	0.0142	0.9858	86.13
27.5	231,002	3,407	0.0147	0.9853	84.90
28.5	226,906		0.0000	1.0000	83.65
29.5	182,987	840	0.0046	0.9954	83.65
30.5	170,372		0.0000	1.0000	83.27
31.5	158,791		0.0000	1.0000	83.27
32.5	152,970		0.0000	1.0000	83.27
33.5	141,140	744	0.0053	0.9947	83.27
34.5	142,479		0.0000	1.0000	82.83
35.5	142,840		0.0000	1.0000	82.83
36.5	143,329		0.0000	1.0000	82.83
37.5	94,767		0.0000	1.0000	82.83
38.5	92,583	250	0.0027	0.9973	82.83

SUEZ WATER PENNSYLVANIA, INC.

ACCOUNT 304.2 STRUCTURES AND IMPROVEMENTS - PUMPING

ORIGINAL LIFE TABLE, CONT.

PLACEMENT BAND 1894-2013			EXPERIENCE BAND 1994-2013		
AGE AT BEGIN OF INTERVAL	EXPOSURES AT BEGINNING OF AGE INTERVAL	RETIREMENTS DURING AGE INTERVAL	RETMT RATIO	SURV RATIO	PCT SURV BEGIN OF INTERVAL
39.5	77,717		0.0000	1.0000	82.60
40.5	66,178		0.0000	1.0000	82.60
41.5	54,513	198	0.0036	0.9964	82.60
42.5	54,163	670	0.0124	0.9876	82.30
43.5	51,210		0.0000	1.0000	81.29
44.5	44,287	7,091	0.1601	0.8399	81.29
45.5	37,196		0.0000	1.0000	68.27
46.5	29,950		0.0000	1.0000	68.27
47.5	24,505		0.0000	1.0000	68.27
48.5	25,345	1,720	0.0679	0.9321	68.27
49.5	13,935		0.0000	1.0000	63.64
50.5	13,935		0.0000	1.0000	63.64
51.5	13,605		0.0000	1.0000	63.64
52.5	12,076		0.0000	1.0000	63.64
53.5	13,794		0.0000	1.0000	63.64
54.5	11,711	150	0.0128	0.9872	63.64
55.5	10,929		0.0000	1.0000	62.82
56.5	10,832		0.0000	1.0000	62.82
57.5	10,678		0.0000	1.0000	62.82
58.5	10,678	1,300	0.1217	0.8783	62.82
59.5	9,163	600	0.0655	0.9345	55.17
60.5	8,605		0.0000	1.0000	51.56
61.5	7,815		0.0000	1.0000	51.56
62.5	8,024		0.0000	1.0000	51.56
63.5	5,044		0.0000	1.0000	51.56
64.5	5,044		0.0000	1.0000	51.56
65.5	36,508		0.0000	1.0000	51.56
66.5	42,576		0.0000	1.0000	51.56
67.5	42,248		0.0000	1.0000	51.56
68.5	41,496	585	0.0141	0.9859	51.56
69.5	40,684		0.0000	1.0000	50.83
70.5	47,374		0.0000	1.0000	50.83
71.5	47,374		0.0000	1.0000	50.83
72.5	51,811		0.0000	1.0000	50.83
73.5	49,939		0.0000	1.0000	50.83
74.5	49,939		0.0000	1.0000	50.83
75.5	49,939		0.0000	1.0000	50.83
76.5	49,474		0.0000	1.0000	50.83
77.5	49,474		0.0000	1.0000	50.83
78.5	49,474		0.0000	1.0000	50.83

SUEZ WATER PENNSYLVANIA, INC.

ACCOUNT 304.2 STRUCTURES AND IMPROVEMENTS - PUMPING

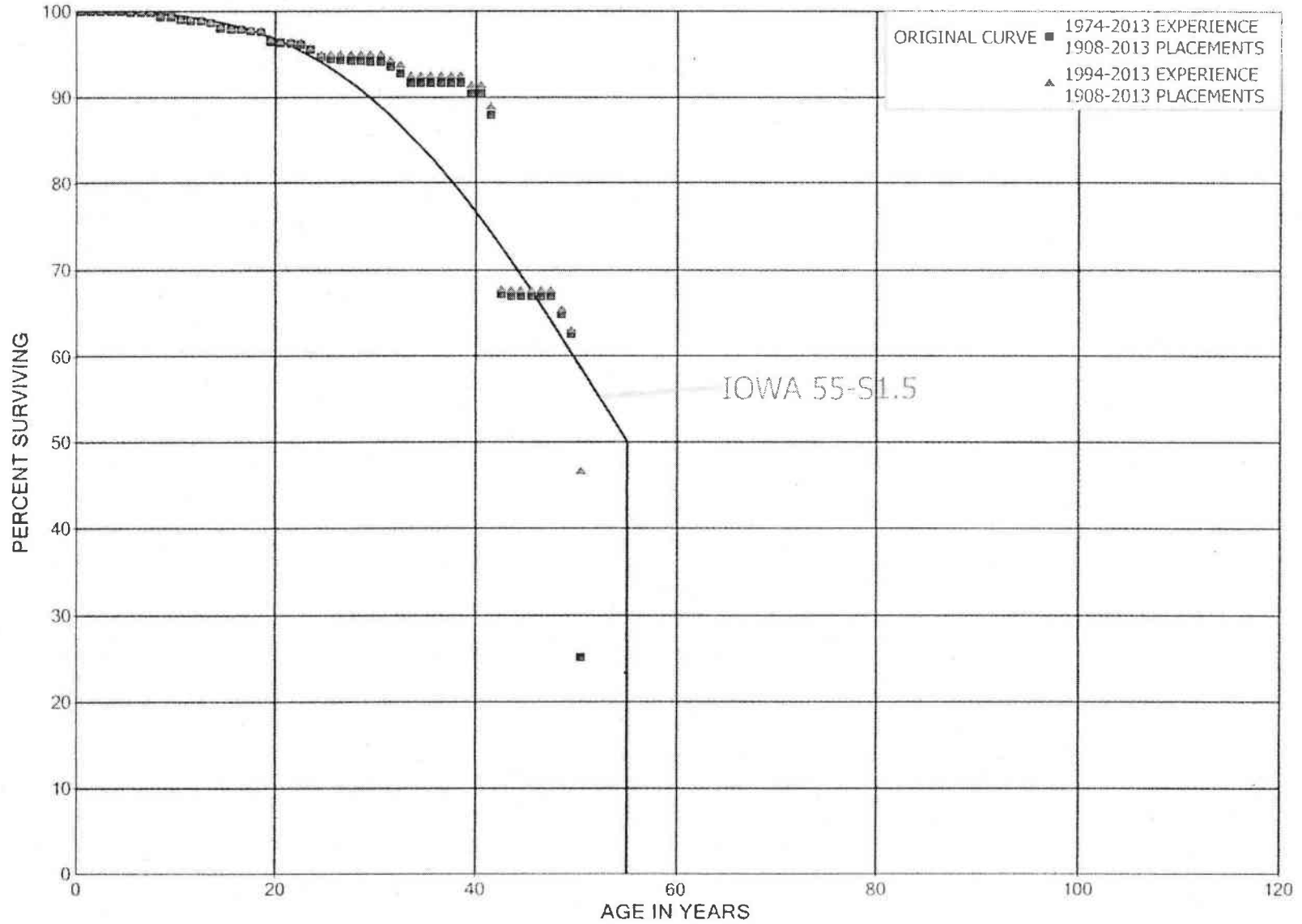
ORIGINAL LIFE TABLE, CONT.

PLACEMENT BAND 1894-2013

EXPERIENCE BAND 1994-2013

AGE AT BEGIN OF INTERVAL	EXPOSURES AT BEGINNING OF AGE INTERVAL	RETIREMENTS DURING AGE INTERVAL	RETMT RATIO	SURV RATIO	PCT SURV BEGIN OF INTERVAL
79.5	49,474		0.0000	1.0000	50.83
80.5	49,431		0.0000	1.0000	50.83
81.5	49,431		0.0000	1.0000	50.83
82.5	49,222		0.0000	1.0000	50.83
83.5	49,222		0.0000	1.0000	50.83
84.5	49,222		0.0000	1.0000	50.83
85.5	33,258		0.0000	1.0000	50.83
86.5	27,775		0.0000	1.0000	50.83
87.5	35,481	100	0.0028	0.9972	50.83
88.5	34,396		0.0000	1.0000	50.69
89.5	34,396		0.0000	1.0000	50.69
90.5	27,706		0.0000	1.0000	50.69
91.5	27,706		0.0000	1.0000	50.69
92.5	23,206		0.0000	1.0000	50.69
93.5	34,765		0.0000	1.0000	50.69
94.5	34,765		0.0000	1.0000	50.69
95.5	34,765		0.0000	1.0000	50.69
96.5	34,765		0.0000	1.0000	50.69
97.5	38,000		0.0000	1.0000	50.69
98.5	38,000		0.0000	1.0000	50.69
99.5	41,945		0.0000	1.0000	50.69
100.5	41,945		0.0000	1.0000	50.69
101.5	41,945		0.0000	1.0000	50.69
102.5	41,945		0.0000	1.0000	50.69
103.5	41,945		0.0000	1.0000	50.69
104.5	41,945		0.0000	1.0000	50.69
105.5	26,545		0.0000	1.0000	50.69
106.5	26,545		0.0000	1.0000	50.69
107.5	18,740		0.0000	1.0000	50.69
108.5	18,740		0.0000	1.0000	50.69
109.5	18,740		0.0000	1.0000	50.69
110.5	18,740		0.0000	1.0000	50.69
111.5	18,740		0.0000	1.0000	50.69
112.5	18,740		0.0000	1.0000	50.69
113.5	7,180		0.0000	1.0000	50.69
114.5	7,180		0.0000	1.0000	50.69
115.5	7,180		0.0000	1.0000	50.69
116.5	7,180		0.0000	1.0000	50.69
117.5	3,946		0.0000	1.0000	50.69
118.5	3,946		0.0000	1.0000	50.69
119.5					50.69

SUEZ WATER PENNSYLVANIA, INC.
ACCOUNT 304.3 STRUCTURES AND IMPROVEMENTS - WATER TREATMENT PLANT
ORIGINAL AND SMOOTH SURVIVOR CURVES



SUEZ WATER PENNSYLVANIA, INC.

ACCOUNT 304.3 STRUCTURES AND IMPROVEMENTS - WATER TREATMENT PLANT

ORIGINAL LIFE TABLE

PLACEMENT BAND 1908-2013

EXPERIENCE BAND 1974-2013

AGE AT BEGIN OF INTERVAL	EXPOSURES AT BEGINNING OF AGE INTERVAL	RETIREMENTS DURING AGE INTERVAL	RETMT RATIO	SURV RATIO	PCT SURV BEGIN OF INTERVAL
0.0	12,929,202		0.0000	1.0000	100.00
0.5	12,794,934	2,014	0.0002	0.9998	100.00
1.5	12,735,192	1,000	0.0001	0.9999	99.98
2.5	12,309,544	929	0.0001	0.9999	99.98
3.5	11,674,884	4,083	0.0003	0.9997	99.97
4.5	11,653,339	7,746	0.0007	0.9993	99.93
5.5	11,609,394	8,322	0.0007	0.9993	99.87
6.5	11,477,429		0.0000	1.0000	99.80
7.5	6,450,015	30,971	0.0048	0.9952	99.80
8.5	3,589,301		0.0000	1.0000	99.32
9.5	3,627,085	14,300	0.0039	0.9961	99.32
10.5	3,558,543	2,068	0.0006	0.9994	98.93
11.5	3,486,136	1,806	0.0005	0.9995	98.87
12.5	3,412,072	7,810	0.0023	0.9977	98.82
13.5	3,395,180	21,985	0.0065	0.9935	98.59
14.5	3,337,130	5,600	0.0017	0.9983	97.95
15.5	3,098,378	150	0.0000	1.0000	97.79
16.5	3,095,438	5,518	0.0018	0.9982	97.78
17.5	3,082,490	3,500	0.0011	0.9989	97.61
18.5	3,060,310	33,166	0.0108	0.9892	97.50
19.5	3,032,621	6,371	0.0021	0.9979	96.44
20.5	684,293	556	0.0008	0.9992	96.24
21.5	677,882	980	0.0014	0.9986	96.16
22.5	643,644	3,300	0.0051	0.9949	96.02
23.5	639,458	6,326	0.0099	0.9901	95.53
24.5	613,380	1,500	0.0024	0.9976	94.58
25.5	521,066	216	0.0004	0.9996	94.35
26.5	500,329	500	0.0010	0.9990	94.31
27.5	446,824	200	0.0004	0.9996	94.22
28.5	347,367	250	0.0007	0.9993	94.18
29.5	222,578		0.0000	1.0000	94.11
30.5	216,243	1,500	0.0069	0.9931	94.11
31.5	213,214	1,729	0.0081	0.9919	93.46
32.5	206,398	2,520	0.0122	0.9878	92.70
33.5	167,769		0.0000	1.0000	91.57
34.5	167,769		0.0000	1.0000	91.57
35.5	167,769		0.0000	1.0000	91.57
36.5	167,769		0.0000	1.0000	91.57
37.5	166,415		0.0000	1.0000	91.57
38.5	161,716	2,000	0.0124	0.9876	91.57

SUEZ WATER PENNSYLVANIA, INC.

ACCOUNT 304.3 STRUCTURES AND IMPROVEMENTS - WATER TREATMENT PLANT

ORIGINAL LIFE TABLE, CONT.

PLACEMENT BAND 1908-2013			EXPERIENCE BAND 1974-2013			
AGE AT BEGIN OF INTERVAL	EXPOSURES AT BEGINNING OF AGE INTERVAL	RETIREMENTS DURING AGE INTERVAL	RETMT RATIO	SURV RATIO	PCT SURV BEGIN OF INTERVAL	
39.5	158,362		0.0000	1.0000	90.43	
40.5	158,362	4,253	0.0269	0.9731	90.43	
41.5	154,013	36,500	0.2370	0.7630	88.01	
42.5	117,504	300	0.0026	0.9974	67.15	
43.5	117,204		0.0000	1.0000	66.98	
44.5	117,204		0.0000	1.0000	66.98	
45.5	120,218		0.0000	1.0000	66.98	
46.5	120,218		0.0000	1.0000	66.98	
47.5	120,036	3,842	0.0320	0.9680	66.98	
48.5	106,643	3,600	0.0338	0.9662	64.83	
49.5	6,279	3,764	0.5995	0.4005	62.64	
50.5	2,515		0.0000	1.0000	25.09	
51.5	2,247		0.0000	1.0000	25.09	
52.5	2,247		0.0000	1.0000	25.09	
53.5	810		0.0000	1.0000	25.09	
54.5	810		0.0000	1.0000	25.09	
55.5	810		0.0000	1.0000	25.09	
56.5	810		0.0000	1.0000	25.09	
57.5	733		0.0000	1.0000	25.09	
58.5	733		0.0000	1.0000	25.09	
59.5	733		0.0000	1.0000	25.09	
60.5	733		0.0000	1.0000	25.09	
61.5	13,517		0.0000	1.0000	25.09	
62.5	13,175		0.0000	1.0000	25.09	
63.5	13,175		0.0000	1.0000	25.09	
64.5	27,007		0.0000	1.0000	25.09	
65.5	28,317		0.0000	1.0000	25.09	
66.5	28,317		0.0000	1.0000	25.09	
67.5	28,317		0.0000	1.0000	25.09	
68.5	28,317		0.0000	1.0000	25.09	
69.5	28,317		0.0000	1.0000	25.09	
70.5	28,317		0.0000	1.0000	25.09	
71.5	28,317	108	0.0038	0.9962	25.09	
72.5	27,818		0.0000	1.0000	25.00	
73.5	27,818		0.0000	1.0000	25.00	
74.5	27,818		0.0000	1.0000	25.00	
75.5	27,818		0.0000	1.0000	25.00	
76.5	27,818		0.0000	1.0000	25.00	
77.5	27,818	49	0.0018	0.9982	25.00	
78.5	27,769		0.0000	1.0000	24.95	

SUEZ WATER PENNSYLVANIA, INC.

ACCOUNT 304.3 STRUCTURES AND IMPROVEMENTS - WATER TREATMENT PLANT

ORIGINAL LIFE TABLE, CONT.

PLACEMENT BAND 1908-2013			EXPERIENCE BAND 1974-2013		
AGE AT BEGIN OF INTERVAL	EXPOSURES AT BEGINNING OF AGE INTERVAL	RETIREMENTS DURING AGE INTERVAL	RETMT RATIO	SURV RATIO	PCT SURV BEGIN OF INTERVAL
79.5	27,769		0.0000	1.0000	24.95
80.5	27,769		0.0000	1.0000	24.95
81.5	27,769		0.0000	1.0000	24.95
82.5	27,769	1,354	0.0488	0.9512	24.95
83.5	26,414	13,852	0.5244	0.4756	23.73
84.5	12,562		0.0000	1.0000	11.29
85.5	12,562		0.0000	1.0000	11.29
86.5	12,562		0.0000	1.0000	11.29
87.5	12,562		0.0000	1.0000	11.29
88.5	12,562		0.0000	1.0000	11.29
89.5	12,562		0.0000	1.0000	11.29
90.5	12,562		0.0000	1.0000	11.29
91.5	12,562		0.0000	1.0000	11.29
92.5	12,562		0.0000	1.0000	11.29
93.5	12,562		0.0000	1.0000	11.29
94.5	12,562		0.0000	1.0000	11.29
95.5	12,562		0.0000	1.0000	11.29
96.5	12,562		0.0000	1.0000	11.29
97.5	12,562		0.0000	1.0000	11.29
98.5	12,562		0.0000	1.0000	11.29
99.5	12,562		0.0000	1.0000	11.29
100.5	12,562		0.0000	1.0000	11.29
101.5	1,309		0.0000	1.0000	11.29
102.5	1,309		0.0000	1.0000	11.29
103.5	1,309		0.0000	1.0000	11.29
104.5	1,309		0.0000	1.0000	11.29
105.5					11.29

SUEZ WATER PENNSYLVANIA, INC.

ACCOUNT 304.3 STRUCTURES AND IMPROVEMENTS - WATER TREATMENT PLANT

ORIGINAL LIFE TABLE

PLACEMENT BAND 1908-2013

EXPERIENCE BAND 1994-2013

AGE AT BEGIN OF INTERVAL	EXPOSURES AT BEGINNING OF AGE INTERVAL	RETIREMENTS DURING AGE INTERVAL	RETMT RATIO	SURV RATIO	PCT SURV BEGIN OF INTERVAL
0.0	9,990,905		0.0000	1.0000	100.00
0.5	12,253,604	2,014	0.0002	0.9998	100.00
1.5	12,204,184	1,000	0.0001	0.9999	99.98
2.5	11,813,930	779	0.0001	0.9999	99.98
3.5	11,180,306	4,083	0.0004	0.9996	99.97
4.5	11,186,763	7,746	0.0007	0.9993	99.93
5.5	11,238,642	7,145	0.0006	0.9994	99.86
6.5	11,127,084		0.0000	1.0000	99.80
7.5	6,154,288	25,025	0.0041	0.9959	99.80
8.5	3,385,473		0.0000	1.0000	99.39
9.5	3,399,236	14,300	0.0042	0.9958	99.39
10.5	3,338,308	2,068	0.0006	0.9994	98.98
11.5	3,266,394	1,362	0.0004	0.9996	98.91
12.5	3,193,837	6,614	0.0021	0.9979	98.87
13.5	3,210,368	21,185	0.0066	0.9934	98.67
14.5	3,152,834	5,600	0.0018	0.9982	98.02
15.5	2,914,082		0.0000	1.0000	97.84
16.5	2,911,250	3,736	0.0013	0.9987	97.84
17.5	2,904,563	3,500	0.0012	0.9988	97.72
18.5	2,889,178	33,166	0.0115	0.9885	97.60
19.5	2,857,366	4,850	0.0017	0.9983	96.48
20.5	510,558		0.0000	1.0000	96.32
21.5	504,688	500	0.0010	0.9990	96.32
22.5	470,597	3,300	0.0070	0.9930	96.22
23.5	466,411	3,235	0.0069	0.9931	95.55
24.5	443,424		0.0000	1.0000	94.88
25.5	351,772		0.0000	1.0000	94.88
26.5	332,543		0.0000	1.0000	94.88
27.5	280,004		0.0000	1.0000	94.88
28.5	194,551		0.0000	1.0000	94.88
29.5	213,060		0.0000	1.0000	94.88
30.5	206,758	1,500	0.0073	0.9927	94.88
31.5	204,765	1,364	0.0067	0.9933	94.19
32.5	203,401	2,520	0.0124	0.9876	93.57
33.5	166,959		0.0000	1.0000	92.41
34.5	166,959		0.0000	1.0000	92.41
35.5	166,959		0.0000	1.0000	92.41
36.5	166,959		0.0000	1.0000	92.41
37.5	165,682		0.0000	1.0000	92.41
38.5	160,983	2,000	0.0124	0.9876	92.41

SUEZ WATER PENNSYLVANIA, INC.

ACCOUNT 304.3 STRUCTURES AND IMPROVEMENTS - WATER TREATMENT PLANT

ORIGINAL LIFE TABLE, CONT.

PLACEMENT BAND 1908-2013			EXPERIENCE BAND 1994-2013		
AGE AT BEGIN OF INTERVAL	EXPOSURES AT BEGINNING OF AGE INTERVAL	RETIREMENTS DURING AGE INTERVAL	RETMT RATIO	SURV RATIO	PCT SURV BEGIN OF INTERVAL
39.5	157,629		0.0000	1.0000	91.26
40.5	157,629	4,253	0.0270	0.9730	91.26
41.5	153,280	36,500	0.2381	0.7619	88.80
42.5	117,113	300	0.0026	0.9974	67.65
43.5	116,813		0.0000	1.0000	67.48
44.5	116,813		0.0000	1.0000	67.48
45.5	116,813		0.0000	1.0000	67.48
46.5	116,813		0.0000	1.0000	67.48
47.5	116,631	3,842	0.0329	0.9671	67.48
48.5	103,238	3,600	0.0349	0.9651	65.26
49.5	2,874	750	0.2609	0.7391	62.98
50.5	2,124		0.0000	1.0000	46.55
51.5	1,857		0.0000	1.0000	46.55
52.5	2,247		0.0000	1.0000	46.55
53.5	810		0.0000	1.0000	46.55
54.5	810		0.0000	1.0000	46.55
55.5	810		0.0000	1.0000	46.55
56.5	810		0.0000	1.0000	46.55
57.5	733		0.0000	1.0000	46.55
58.5	733		0.0000	1.0000	46.55
59.5	733		0.0000	1.0000	46.55
60.5	733		0.0000	1.0000	46.55
61.5	733		0.0000	1.0000	46.55
62.5	391		0.0000	1.0000	46.55
63.5	391		0.0000	1.0000	46.55
64.5	391		0.0000	1.0000	46.55
65.5	391		0.0000	1.0000	46.55
66.5	391		0.0000	1.0000	46.55
67.5	391		0.0000	1.0000	46.55
68.5	391		0.0000	1.0000	46.55
69.5	391		0.0000	1.0000	46.55
70.5	391		0.0000	1.0000	46.55
71.5	391		0.0000	1.0000	46.55
72.5					46.55
73.5					
74.5					
75.5					
76.5					
77.5					
78.5					

SUEZ WATER PENNSYLVANIA, INC.

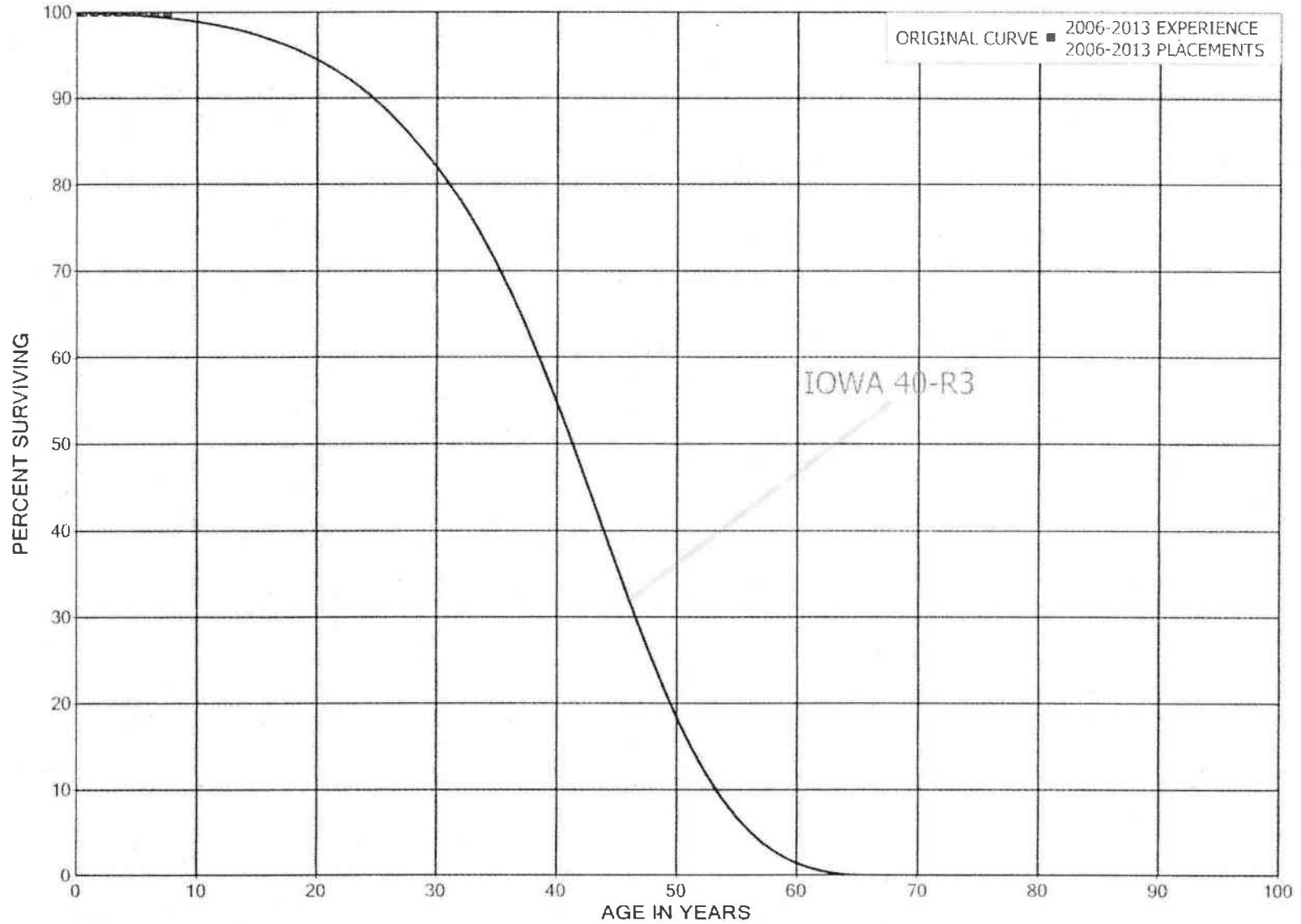
ACCOUNT 304.3 STRUCTURES AND IMPROVEMENTS - WATER TREATMENT PLANT

ORIGINAL LIFE TABLE, CONT.

PLACEMENT BAND 1908-2013			EXPERIENCE BAND 1994-2013		
AGE AT BEGIN OF INTERVAL	EXPOSURES AT BEGINNING OF AGE INTERVAL	RETIREMENTS DURING AGE INTERVAL	RETMT RATIO	SURV RATIO	PCT SURV BEGIN OF INTERVAL
79.5					
80.5					
81.5	12,627		0.0000		
82.5	12,627	1,354	0.1073		
83.5	11,273	20	0.0018		
84.5	11,253		0.0000		
85.5	12,562		0.0000		
86.5	12,562		0.0000		
87.5	12,562		0.0000		
88.5	12,562		0.0000		
89.5	12,562		0.0000		
90.5	12,562		0.0000		
91.5	12,562		0.0000		
92.5	12,562		0.0000		
93.5	12,562		0.0000		
94.5	12,562		0.0000		
95.5	12,562		0.0000		
96.5	12,562		0.0000		
97.5	12,562		0.0000		
98.5	12,562		0.0000		
99.5	12,562		0.0000		
100.5	12,562		0.0000		
101.5	1,309		0.0000		
102.5	1,309		0.0000		
103.5	1,309		0.0000		
104.5	1,309		0.0000		
105.5					



SUEZ WATER PENNSYLVANIA, INC.
ACCOUNT 304.4 STRUCTURES AND IMPROVEMENTS - TRANSMISSION AND DISTRIBUTION
ORIGINAL AND SMOOTH SURVIVOR CURVES



SUEZ WATER PENNSYLVANIA, INC.

ACCOUNT 304.4 STRUCTURES AND IMPROVEMENTS - TRANSMISSION AND DISTRIBUTION

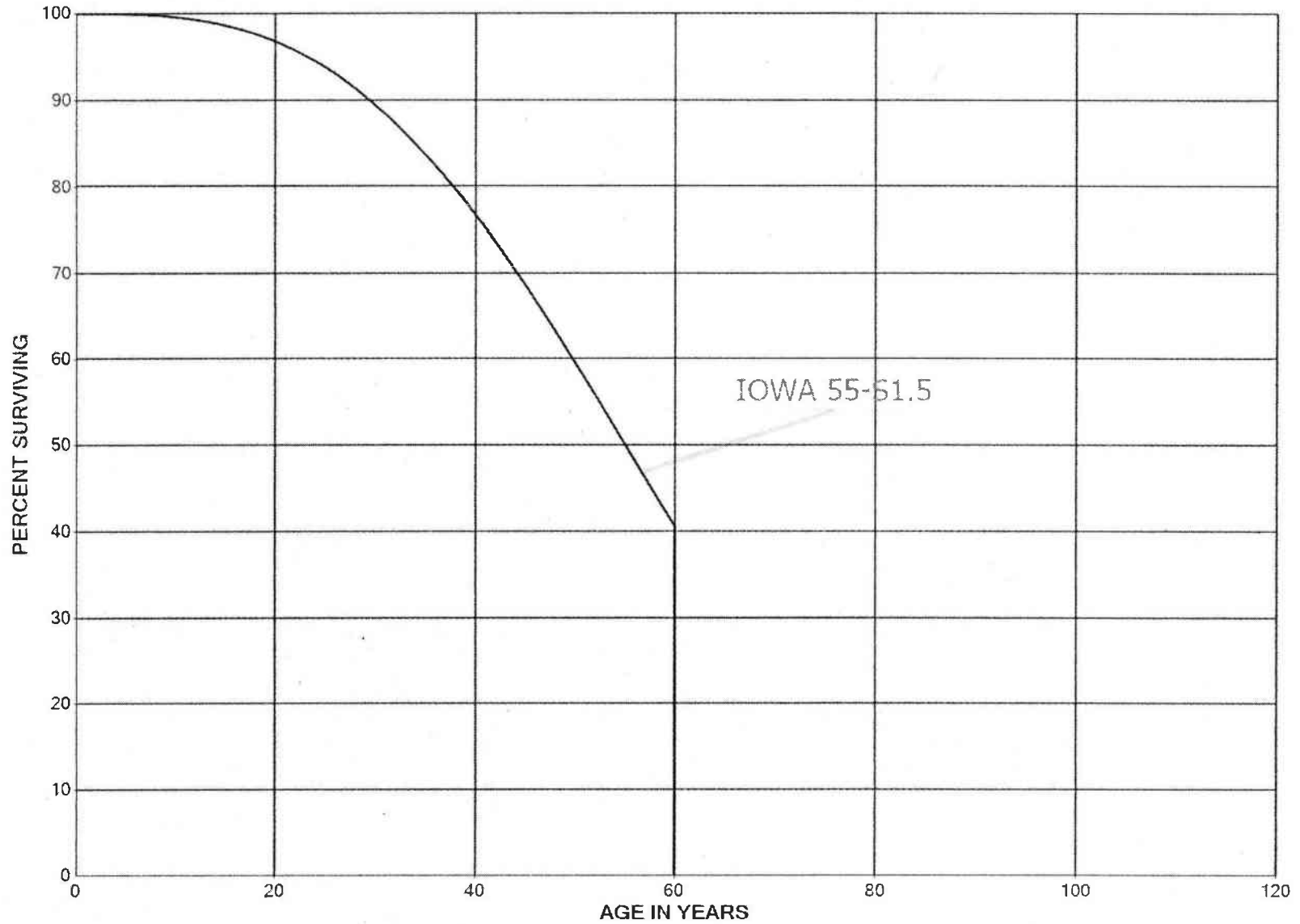
ORIGINAL LIFE TABLE

PLACEMENT BAND 2006-2013

EXPERIENCE BAND 2006-2013

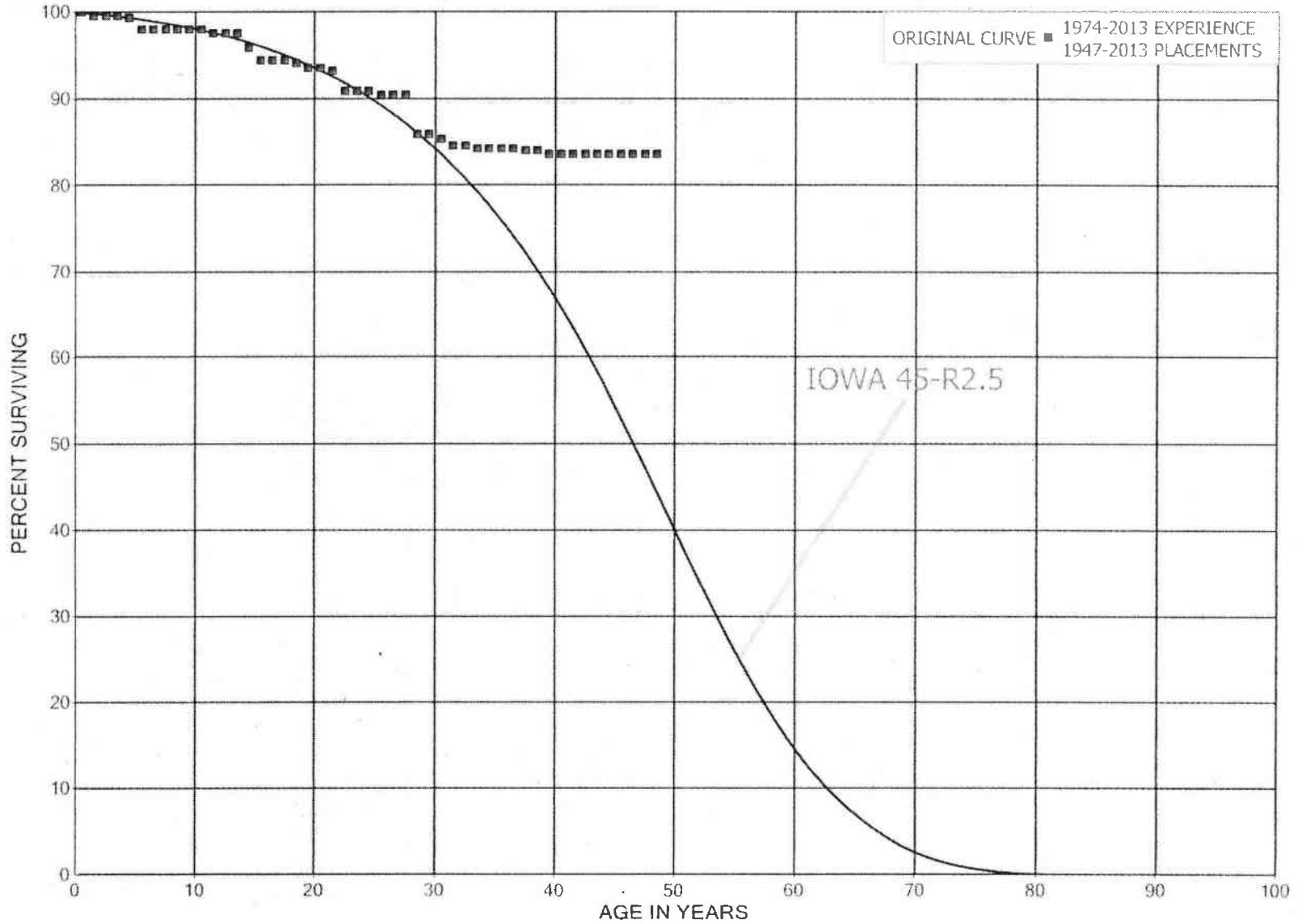
AGE AT BEGIN OF INTERVAL	EXPOSURES AT BEGINNING OF AGE INTERVAL	RETIREMENTS DURING AGE INTERVAL	RETMT RATIO	SURV RATIO	PCT SURV BEGIN OF INTERVAL
0.0	46,888		0.0000	1.0000	100.00
0.5	43,423		0.0000	1.0000	100.00
1.5	40,847		0.0000	1.0000	100.00
2.5	40,847		0.0000	1.0000	100.00
3.5	40,648		0.0000	1.0000	100.00
4.5	11,613		0.0000	1.0000	100.00
5.5	8,164		0.0000	1.0000	100.00
6.5	8,164		0.0000	1.0000	100.00
7.5					100.00

SUEZ WATER PENNSYLVANIA, INC.
ACCOUNT 304.51 STRUCTURES AND IMPROVEMENTS - OFFICES (BLOOMSBURG TREATMENT PLANT)
SMOOTH SURVIVOR CURVE





SUEZ WATER PENNSYLVANIA, INC.
ACCOUNT 304.51 STRUCTURES AND IMPROVEMENTS - OFFICES
ORIGINAL AND SMOOTH SURVIVOR CURVES



SUEZ WATER PENNSYLVANIA, INC.

ACCOUNT 304.51 STRUCTURES AND IMPROVEMENTS - OFFICES

ORIGINAL LIFE TABLE

PLACEMENT BAND 1947-2013

EXPERIENCE BAND 1974-2013

AGE AT BEGIN OF INTERVAL	EXPOSURES AT BEGINNING OF AGE INTERVAL	RETIREMENTS DURING AGE INTERVAL	RETMT RATIO	SURV RATIO	PCT SURV BEGIN OF INTERVAL
0.0	617,373		0.0000	1.0000	100.00
0.5	600,093	3,247	0.0054	0.9946	100.00
1.5	584,921		0.0000	1.0000	99.46
2.5	578,902		0.0000	1.0000	99.46
3.5	591,891	1,166	0.0020	0.9980	99.46
4.5	595,489	7,896	0.0133	0.9867	99.26
5.5	579,885		0.0000	1.0000	97.95
6.5	548,778		0.0000	1.0000	97.95
7.5	543,303		0.0000	1.0000	97.95
8.5	533,039		0.0000	1.0000	97.95
9.5	528,089		0.0000	1.0000	97.95
10.5	510,501	2,119	0.0042	0.9958	97.95
11.5	509,523		0.0000	1.0000	97.54
12.5	503,945		0.0000	1.0000	97.54
13.5	501,939	8,700	0.0173	0.9827	97.54
14.5	383,034	5,797	0.0151	0.9849	95.85
15.5	371,985		0.0000	1.0000	94.40
16.5	359,774		0.0000	1.0000	94.40
17.5	367,149	1,236	0.0034	0.9966	94.40
18.5	361,020	2,120	0.0059	0.9941	94.08
19.5	359,118		0.0000	1.0000	93.53
20.5	351,121	1,500	0.0043	0.9957	93.53
21.5	349,477	8,740	0.0250	0.9750	93.13
22.5	337,738		0.0000	1.0000	90.80
23.5	293,088		0.0000	1.0000	90.80
24.5	262,719	1,100	0.0042	0.9958	90.80
25.5	261,619		0.0000	1.0000	90.42
26.5	269,562		0.0000	1.0000	90.42
27.5	266,523	13,324	0.0500	0.9500	90.42
28.5	88,489		0.0000	1.0000	85.90
29.5	87,584	500	0.0057	0.9943	85.90
30.5	86,260	750	0.0087	0.9913	85.41
31.5	83,599		0.0000	1.0000	84.67
32.5	83,063	321	0.0039	0.9961	84.67
33.5	71,873		0.0000	1.0000	84.34
34.5	61,823		0.0000	1.0000	84.34
35.5	61,823		0.0000	1.0000	84.34
36.5	61,823	194	0.0031	0.9969	84.34
37.5	61,112		0.0000	1.0000	84.08
38.5	60,501	300	0.0050	0.9950	84.08

SUEZ WATER PENNSYLVANIA, INC.

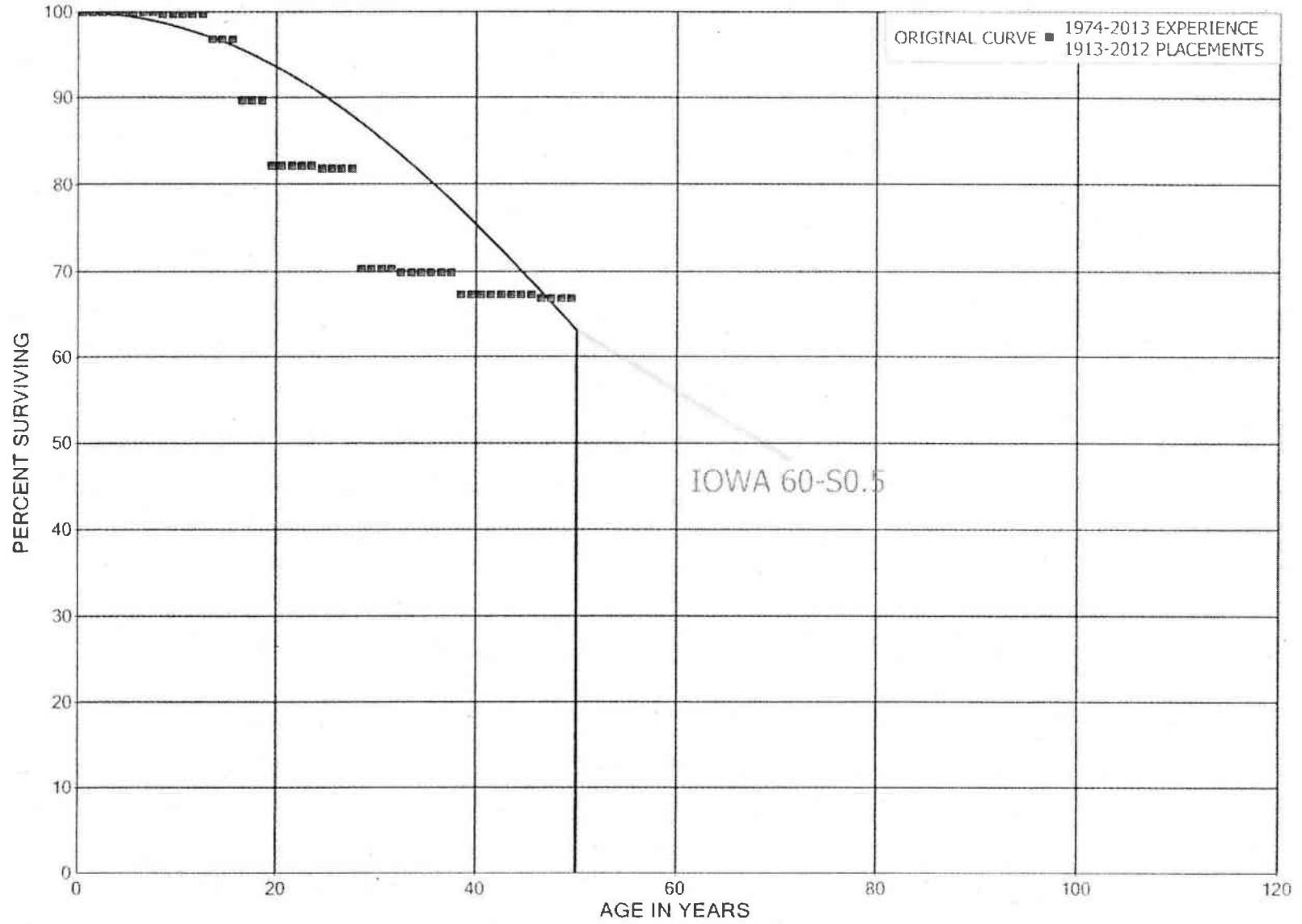
ACCOUNT 304.51 STRUCTURES AND IMPROVEMENTS - OFFICES

ORIGINAL LIFE TABLE, CONT.

PLACEMENT BAND 1947-2013			EXPERIENCE BAND 1974-2013		
AGE AT BEGIN OF INTERVAL	EXPOSURES AT BEGINNING OF AGE INTERVAL	RETIREMENTS DURING AGE INTERVAL	RETMT RATIO	SURV RATIO	PCT SURV BEGIN OF INTERVAL
39.5	60,201		0.0000	1.0000	83.66
40.5	59,304		0.0000	1.0000	83.66
41.5	59,116		0.0000	1.0000	83.66
42.5	57,987		0.0000	1.0000	83.66
43.5	57,310		0.0000	1.0000	83.66
44.5	56,560		0.0000	1.0000	83.66
45.5	56,425		0.0000	1.0000	83.66
46.5	53,589		0.0000	1.0000	83.66
47.5	28,551		0.0000	1.0000	83.66
48.5	27,420		0.0000	1.0000	83.66
49.5	11,134		0.0000	1.0000	83.66
50.5	10,778		0.0000	1.0000	83.66
51.5	10,778		0.0000	1.0000	83.66
52.5	10,722		0.0000	1.0000	83.66
53.5	10,722		0.0000	1.0000	83.66
54.5	10,722		0.0000	1.0000	83.66
55.5	10,722		0.0000	1.0000	83.66
56.5					83.66



SUEZ WATER PENNSYLVANIA, INC.
ACCOUNT 304.52 STRUCTURES AND IMPROVEMENTS - STORES, SHOP AND GARAGE
ORIGINAL AND SMOOTH SURVIVOR CURVES



SUEZ WATER PENNSYLVANIA, INC.

ACCOUNT 304.52 STRUCTURES AND IMPROVEMENTS - STORES, SHOP AND GARAGE

ORIGINAL LIFE TABLE

PLACEMENT BAND 1913-2012

EXPERIENCE BAND 1974-2013

AGE AT BEGIN OF INTERVAL	EXPOSURES AT BEGINNING OF AGE INTERVAL	RETIREMENTS DURING AGE INTERVAL	RETMT RATIO	SURV RATIO	PCT SURV BEGIN OF INTERVAL
0.0	1,669,385		0.0000	1.0000	100.00
0.5	1,669,385		0.0000	1.0000	100.00
1.5	1,654,348		0.0000	1.0000	100.00
2.5	1,668,323	899	0.0005	0.9995	100.00
3.5	1,664,485		0.0000	1.0000	99.95
4.5	1,665,390		0.0000	1.0000	99.95
5.5	1,663,647		0.0000	1.0000	99.95
6.5	1,638,056		0.0000	1.0000	99.95
7.5	1,638,056	4,000	0.0024	0.9976	99.95
8.5	1,634,139		0.0000	1.0000	99.70
9.5	1,634,139		0.0000	1.0000	99.70
10.5	177,626		0.0000	1.0000	99.70
11.5	177,626		0.0000	1.0000	99.70
12.5	179,350	5,295	0.0295	0.9705	99.70
13.5	174,055		0.0000	1.0000	96.76
14.5	162,204	30	0.0002	0.9998	96.76
15.5	162,174	11,900	0.0734	0.9266	96.74
16.5	150,274		0.0000	1.0000	89.64
17.5	148,394		0.0000	1.0000	89.64
18.5	146,710	12,285	0.0837	0.9163	89.64
19.5	134,425		0.0000	1.0000	82.14
20.5	96,568		0.0000	1.0000	82.14
21.5	96,568		0.0000	1.0000	82.14
22.5	82,624		0.0000	1.0000	82.14
23.5	82,624	250	0.0030	0.9970	82.14
24.5	82,374		0.0000	1.0000	81.89
25.5	82,374		0.0000	1.0000	81.89
26.5	83,464		0.0000	1.0000	81.89
27.5	85,147	12,052	0.1415	0.8585	81.89
28.5	48,834		0.0000	1.0000	70.30
29.5	46,093		0.0000	1.0000	70.30
30.5	22,341		0.0000	1.0000	70.30
31.5	21,054	144	0.0068	0.9932	70.30
32.5	23,809		0.0000	1.0000	69.82
33.5	23,809		0.0000	1.0000	69.82
34.5	23,809		0.0000	1.0000	69.82
35.5	23,809		0.0000	1.0000	69.82
36.5	23,809		0.0000	1.0000	69.82
37.5	23,809	875	0.0368	0.9632	69.82
38.5	22,786		0.0000	1.0000	67.25

SUEZ WATER PENNSYLVANIA, INC.

ACCOUNT 304.52 STRUCTURES AND IMPROVEMENTS - STORES, SHOP AND GARAGE

ORIGINAL LIFE TABLE, CONT.

PLACEMENT BAND 1913-2012			EXPERIENCE BAND 1974-2013		
AGE AT BEGIN OF INTERVAL	EXPOSURES AT BEGINNING OF AGE INTERVAL	RETIREMENTS DURING AGE INTERVAL	RETMT RATIO	SURV RATIO	PCT SURV BEGIN OF INTERVAL
39.5	22,786		0.0000	1.0000	67.25
40.5	22,786		0.0000	1.0000	67.25
41.5	22,786		0.0000	1.0000	67.25
42.5	9,205		0.0000	1.0000	67.25
43.5	9,205		0.0000	1.0000	67.25
44.5	9,205		0.0000	1.0000	67.25
45.5	9,205	50	0.0054	0.9946	67.25
46.5	9,155		0.0000	1.0000	66.88
47.5	9,155		0.0000	1.0000	66.88
48.5	9,073		0.0000	1.0000	66.88
49.5	9,073		0.0000	1.0000	66.88
50.5	9,073		0.0000	1.0000	66.88
51.5	9,073		0.0000	1.0000	66.88
52.5	7,348		0.0000	1.0000	66.88
53.5	7,348		0.0000	1.0000	66.88
54.5	7,348		0.0000	1.0000	66.88
55.5	7,348		0.0000	1.0000	66.88
56.5	7,348		0.0000	1.0000	66.88
57.5	7,348		0.0000	1.0000	66.88
58.5	7,348		0.0000	1.0000	66.88
59.5	7,348		0.0000	1.0000	66.88
60.5	8,731		0.0000	1.0000	66.88
61.5	8,731		0.0000	1.0000	66.88
62.5	8,078		0.0000	1.0000	66.88
63.5	8,078		0.0000	1.0000	66.88
64.5	8,078		0.0000	1.0000	66.88
65.5	8,078		0.0000	1.0000	66.88
66.5	6,987		0.0000	1.0000	66.88
67.5	5,174		0.0000	1.0000	66.88
68.5	5,174		0.0000	1.0000	66.88
69.5	4,683		0.0000	1.0000	66.88
70.5	4,683		0.0000	1.0000	66.88
71.5	4,594		0.0000	1.0000	66.88
72.5	1,695	91	0.0539	0.9461	66.88
73.5	1,604		0.0000	1.0000	63.28
74.5	1,604		0.0000	1.0000	63.28
75.5	1,604		0.0000	1.0000	63.28
76.5	1,604		0.0000	1.0000	63.28
77.5	1,604		0.0000	1.0000	63.28
78.5	1,383		0.0000	1.0000	63.28

SUEZ WATER PENNSYLVANIA, INC.

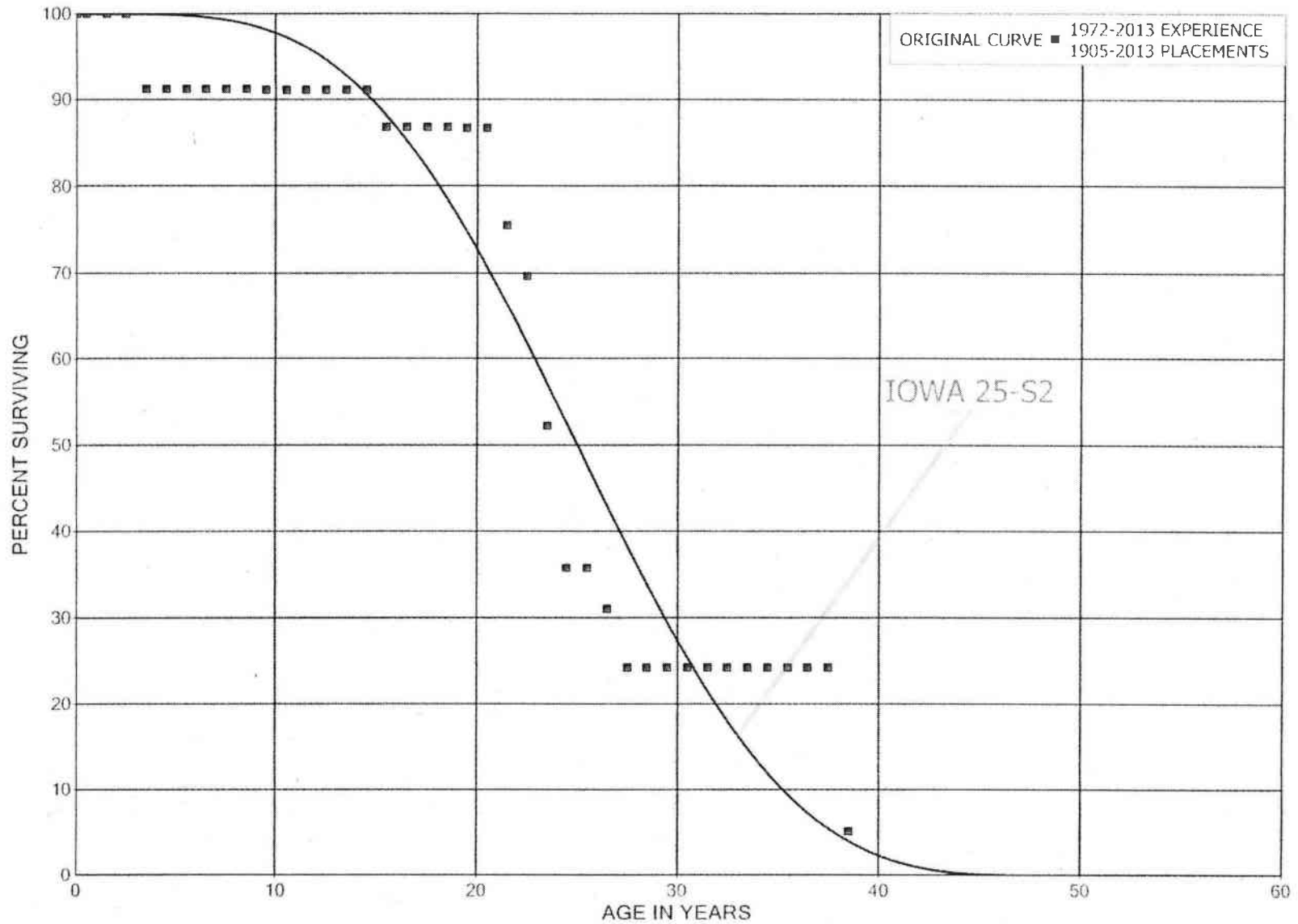
ACCOUNT 304.52 STRUCTURES AND IMPROVEMENTS - STORES, SHOP AND GARAGE

ORIGINAL LIFE TABLE, CONT.

PLACEMENT BAND 1913-2012			EXPERIENCE BAND 1974-2013		
AGE AT BEGIN OF INTERVAL	EXPOSURES AT BEGINNING OF AGE INTERVAL	RETIREMENTS DURING AGE INTERVAL	RETMT RATIO	SURV RATIO	PCT SURV BEGIN OF INTERVAL
79.5	1,383		0.0000	1.0000	63.28
80.5	1,383		0.0000	1.0000	63.28
81.5	1,383		0.0000	1.0000	63.28
82.5	1,383		0.0000	1.0000	63.28
83.5	1,383		0.0000	1.0000	63.28
84.5	1,383		0.0000	1.0000	63.28
85.5	1,383		0.0000	1.0000	63.28
86.5	1,383		0.0000	1.0000	63.28
87.5	1,383		0.0000	1.0000	63.28
88.5	1,383		0.0000	1.0000	63.28
89.5	1,383		0.0000	1.0000	63.28
90.5	1,383		0.0000	1.0000	63.28
91.5	1,383		0.0000	1.0000	63.28
92.5	1,383		0.0000	1.0000	63.28
93.5	1,383		0.0000	1.0000	63.28
94.5	1,383	1,383	1.0000		63.28
95.5					



SUEZ WATER PENNSYLVANIA, INC.
ACCOUNT 304.53 STRUCTURES AND IMPROVEMENTS - MISCELLANEOUS
ORIGINAL AND SMOOTH SURVIVOR CURVES



SUEZ WATER PENNSYLVANIA, INC.

ACCOUNT 304.53 STRUCTURES AND IMPROVEMENTS - MISCELLANEOUS

ORIGINAL LIFE TABLE

PLACEMENT BAND 1905-2013

EXPERIENCE BAND 1972-2013

AGE AT BEGIN OF INTERVAL	EXPOSURES AT BEGINNING OF AGE INTERVAL	RETIREMENTS DURING AGE INTERVAL	RETMT RATIO	SURV RATIO	PCT SURV BEGIN OF INTERVAL
0.0	420,087		0.0000	1.0000	100.00
0.5	416,356		0.0000	1.0000	100.00
1.5	383,862		0.0000	1.0000	100.00
2.5	317,947	27,892	0.0877	0.9123	100.00
3.5	248,675		0.0000	1.0000	91.23
4.5	248,675		0.0000	1.0000	91.23
5.5	229,807		0.0000	1.0000	91.23
6.5	229,807		0.0000	1.0000	91.23
7.5	229,807		0.0000	1.0000	91.23
8.5	229,807	300	0.0013	0.9987	91.23
9.5	230,301		0.0000	1.0000	91.11
10.5	230,301		0.0000	1.0000	91.11
11.5	196,461		0.0000	1.0000	91.11
12.5	90,230		0.0000	1.0000	91.11
13.5	89,434		0.0000	1.0000	91.11
14.5	89,667	4,221	0.0471	0.9529	91.11
15.5	87,932		0.0000	1.0000	86.82
16.5	15,079		0.0000	1.0000	86.82
17.5	15,079		0.0000	1.0000	86.82
18.5	15,122	25	0.0017	0.9983	86.82
19.5	15,832		0.0000	1.0000	86.68
20.5	7,345	942	0.1283	0.8717	86.68
21.5	6,403	501	0.0783	0.9217	75.56
22.5	5,902	1,481	0.2510	0.7490	69.65
23.5	4,582	1,447	0.3158	0.6842	52.17
24.5	2,530		0.0000	1.0000	35.69
25.5	2,530	336	0.1328	0.8672	35.69
26.5	2,194	479	0.2183	0.7817	30.95
27.5	1,715		0.0000	1.0000	24.20
28.5	1,715		0.0000	1.0000	24.20
29.5	1,715		0.0000	1.0000	24.20
30.5	6,715		0.0000	1.0000	24.20
31.5	6,715		0.0000	1.0000	24.20
32.5	6,320		0.0000	1.0000	24.20
33.5	6,320		0.0000	1.0000	24.20
34.5	6,320		0.0000	1.0000	24.20
35.5	6,320		0.0000	1.0000	24.20
36.5	6,320		0.0000	1.0000	24.20
37.5	6,320	5,000	0.7911	0.2089	24.20
38.5	1,320		0.0000	1.0000	5.05

SUEZ WATER PENNSYLVANIA, INC.

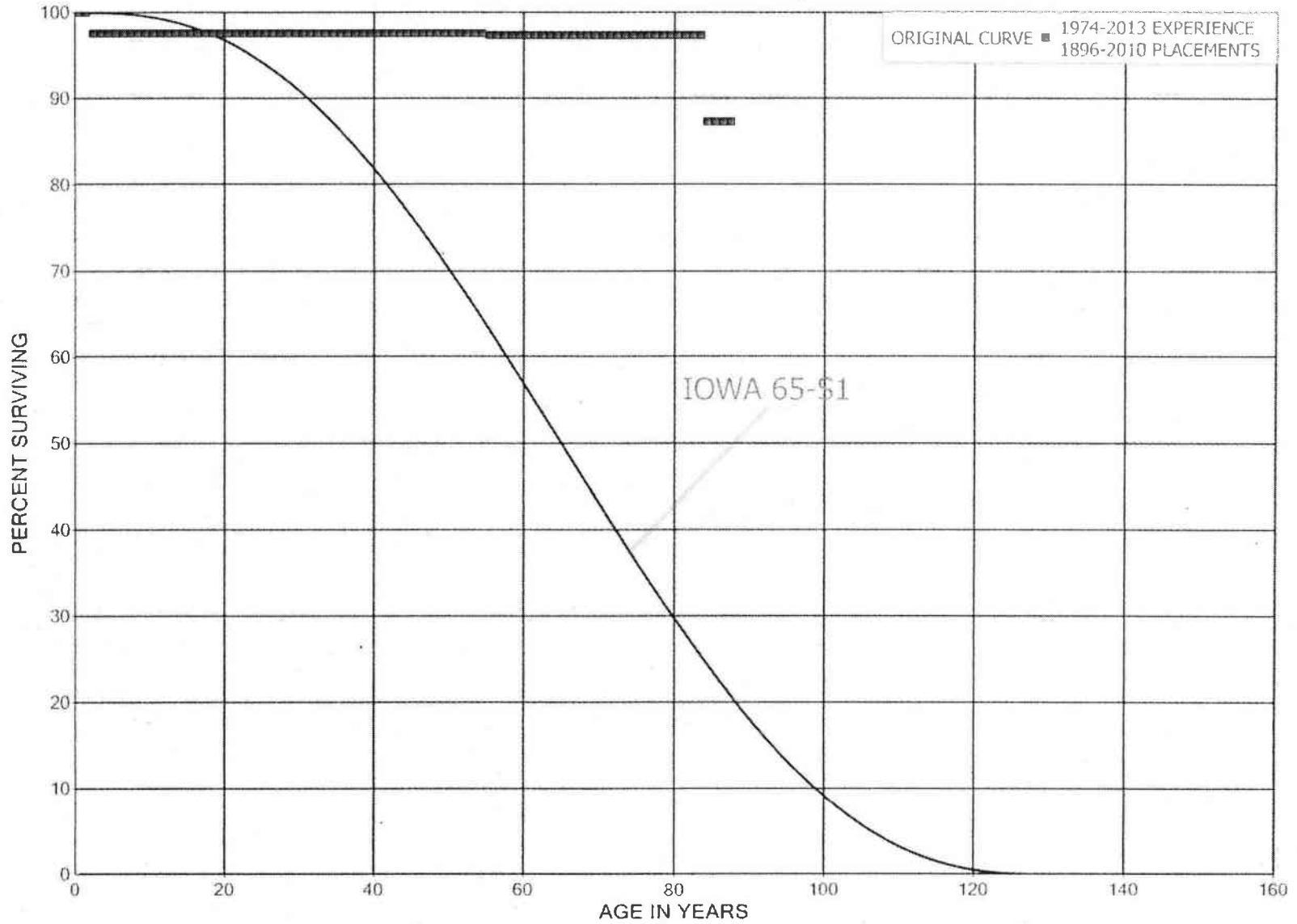
ACCOUNT 304.53 STRUCTURES AND IMPROVEMENTS - MISCELLANEOUS

ORIGINAL LIFE TABLE, CONT.

PLACEMENT BAND 1905-2013			EXPERIENCE BAND 1972-2013		
AGE AT BEGIN OF INTERVAL	EXPOSURES AT BEGINNING OF AGE INTERVAL	RETIREMENTS DURING AGE INTERVAL	RETMT RATIO	SURV RATIO	PCT SURV BEGIN OF INTERVAL
39.5	1,320		0.0000	1.0000	5.05
40.5	1,320		0.0000	1.0000	5.05
41.5	1,320		0.0000	1.0000	5.05
42.5	1,320		0.0000	1.0000	5.05
43.5	2,507		0.0000	1.0000	5.05
44.5	2,507		0.0000	1.0000	5.05
45.5	2,507		0.0000	1.0000	5.05
46.5	2,507		0.0000	1.0000	5.05
47.5	2,507		0.0000	1.0000	5.05
48.5	2,507		0.0000	1.0000	5.05
49.5	2,507		0.0000	1.0000	5.05
50.5	2,507		0.0000	1.0000	5.05
51.5	2,507		0.0000	1.0000	5.05
52.5	1,320		0.0000	1.0000	5.05
53.5	1,477	157	0.1063	0.8937	5.05
54.5	1,320		0.0000	1.0000	4.52
55.5	1,320		0.0000	1.0000	4.52
56.5	1,320		0.0000	1.0000	4.52
57.5					4.52
58.5					
59.5					
60.5					
61.5					
62.5	735		0.0000		
63.5	735		0.0000		
64.5	735		0.0000		
65.5	735	735	1.0000		
66.5	1,548		0.0000		
67.5	1,548		0.0000		
68.5	1,548		0.0000		
69.5	1,548		0.0000		
70.5	1,548		0.0000		
71.5	1,548		0.0000		
72.5	1,548		0.0000		
73.5	1,548		0.0000		
74.5	1,548		0.0000		
75.5					



SUEZ WATER PENNSYLVANIA, INC.
ACCOUNT 305 COLLECTING AND IMPOUNDING RESERVOIRS
ORIGINAL AND SMOOTH SURVIVOR CURVES



SUEZ WATER PENNSYLVANIA, INC.

ACCOUNT 305 COLLECTING AND IMPOUNDING RESERVOIRS

ORIGINAL LIFE TABLE

PLACEMENT BAND 1896-2010

EXPERIENCE BAND 1974-2013

AGE AT BEGIN OF INTERVAL	EXPOSURES AT BEGINNING OF AGE INTERVAL	RETIREMENTS DURING AGE INTERVAL	RETMT RATIO	SURV RATIO	PCT SURV BEGIN OF INTERVAL
0.0	56,490		0.0000	1.0000	100.00
0.5	57,116		0.0000	1.0000	100.00
1.5	57,116	1,446	0.0253	0.9747	100.00
2.5	55,670		0.0000	1.0000	97.47
3.5	55,669		0.0000	1.0000	97.47
4.5	55,669		0.0000	1.0000	97.47
5.5	55,669		0.0000	1.0000	97.47
6.5	55,669		0.0000	1.0000	97.47
7.5	55,669		0.0000	1.0000	97.47
8.5	55,669		0.0000	1.0000	97.47
9.5	55,669		0.0000	1.0000	97.47
10.5	55,669		0.0000	1.0000	97.47
11.5	55,669		0.0000	1.0000	97.47
12.5	55,669		0.0000	1.0000	97.47
13.5	45,090		0.0000	1.0000	97.47
14.5	45,090		0.0000	1.0000	97.47
15.5	45,945		0.0000	1.0000	97.47
16.5	45,945		0.0000	1.0000	97.47
17.5	48,409		0.0000	1.0000	97.47
18.5	48,409		0.0000	1.0000	97.47
19.5	55,745		0.0000	1.0000	97.47
20.5	55,745		0.0000	1.0000	97.47
21.5	44,521		0.0000	1.0000	97.47
22.5	44,521		0.0000	1.0000	97.47
23.5	44,521		0.0000	1.0000	97.47
24.5	42,057		0.0000	1.0000	97.47
25.5	42,057		0.0000	1.0000	97.47
26.5	42,057		0.0000	1.0000	97.47
27.5	40,474		0.0000	1.0000	97.47
28.5	19,263		0.0000	1.0000	97.47
29.5	19,263		0.0000	1.0000	97.47
30.5	16,405		0.0000	1.0000	97.47
31.5	8,191		0.0000	1.0000	97.47
32.5	855		0.0000	1.0000	97.47
33.5	855		0.0000	1.0000	97.47
34.5	855		0.0000	1.0000	97.47
35.5	855		0.0000	1.0000	97.47
36.5	855		0.0000	1.0000	97.47
37.5	10,404		0.0000	1.0000	97.47
38.5	10,404		0.0000	1.0000	97.47

SUEZ WATER PENNSYLVANIA, INC.

ACCOUNT 305 COLLECTING AND IMPOUNDING RESERVOIRS

ORIGINAL LIFE TABLE, CONT.

PLACEMENT BAND 1896-2010

EXPERIENCE BAND 1974-2013

AGE AT BEGIN OF INTERVAL	EXPOSURES AT BEGINNING OF AGE INTERVAL	RETIREMENTS DURING AGE INTERVAL	RETMT RATIO	SURV RATIO	PCT SURV BEGIN OF INTERVAL
39.5	10,404		0.0000	1.0000	97.47
40.5	10,404		0.0000	1.0000	97.47
41.5	855		0.0000	1.0000	97.47
42.5	855		0.0000	1.0000	97.47
43.5	855		0.0000	1.0000	97.47
44.5	855		0.0000	1.0000	97.47
45.5	4,991		0.0000	1.0000	97.47
46.5	52,106		0.0000	1.0000	97.47
47.5	52,106		0.0000	1.0000	97.47
48.5	52,106		0.0000	1.0000	97.47
49.5	52,106		0.0000	1.0000	97.47
50.5	52,106		0.0000	1.0000	97.47
51.5	52,106		0.0000	1.0000	97.47
52.5	52,106		0.0000	1.0000	97.47
53.5	52,106		0.0000	1.0000	97.47
54.5	52,106	118	0.0023	0.9977	97.47
55.5	51,133		0.0000	1.0000	97.25
56.5	51,133		0.0000	1.0000	97.25
57.5	51,133		0.0000	1.0000	97.25
58.5	51,133		0.0000	1.0000	97.25
59.5	51,133		0.0000	1.0000	97.25
60.5	51,133		0.0000	1.0000	97.25
61.5	51,183		0.0000	1.0000	97.25
62.5	51,183		0.0000	1.0000	97.25
63.5	51,183		0.0000	1.0000	97.25
64.5	78,313		0.0000	1.0000	97.25
65.5	89,570		0.0000	1.0000	97.25
66.5	89,570		0.0000	1.0000	97.25
67.5	89,570		0.0000	1.0000	97.25
68.5	89,520		0.0000	1.0000	97.25
69.5	78,263		0.0000	1.0000	97.25
70.5	78,263		0.0000	1.0000	97.25
71.5	78,263		0.0000	1.0000	97.25
72.5	78,263		0.0000	1.0000	97.25
73.5	78,263		0.0000	1.0000	97.25
74.5	78,263		0.0000	1.0000	97.25
75.5	78,263		0.0000	1.0000	97.25
76.5	78,263		0.0000	1.0000	97.25
77.5	84,472		0.0000	1.0000	97.25
78.5	84,472		0.0000	1.0000	97.25

SUEZ WATER PENNSYLVANIA, INC.

ACCOUNT 305 COLLECTING AND IMPOUNDING RESERVOIRS

ORIGINAL LIFE TABLE, CONT.

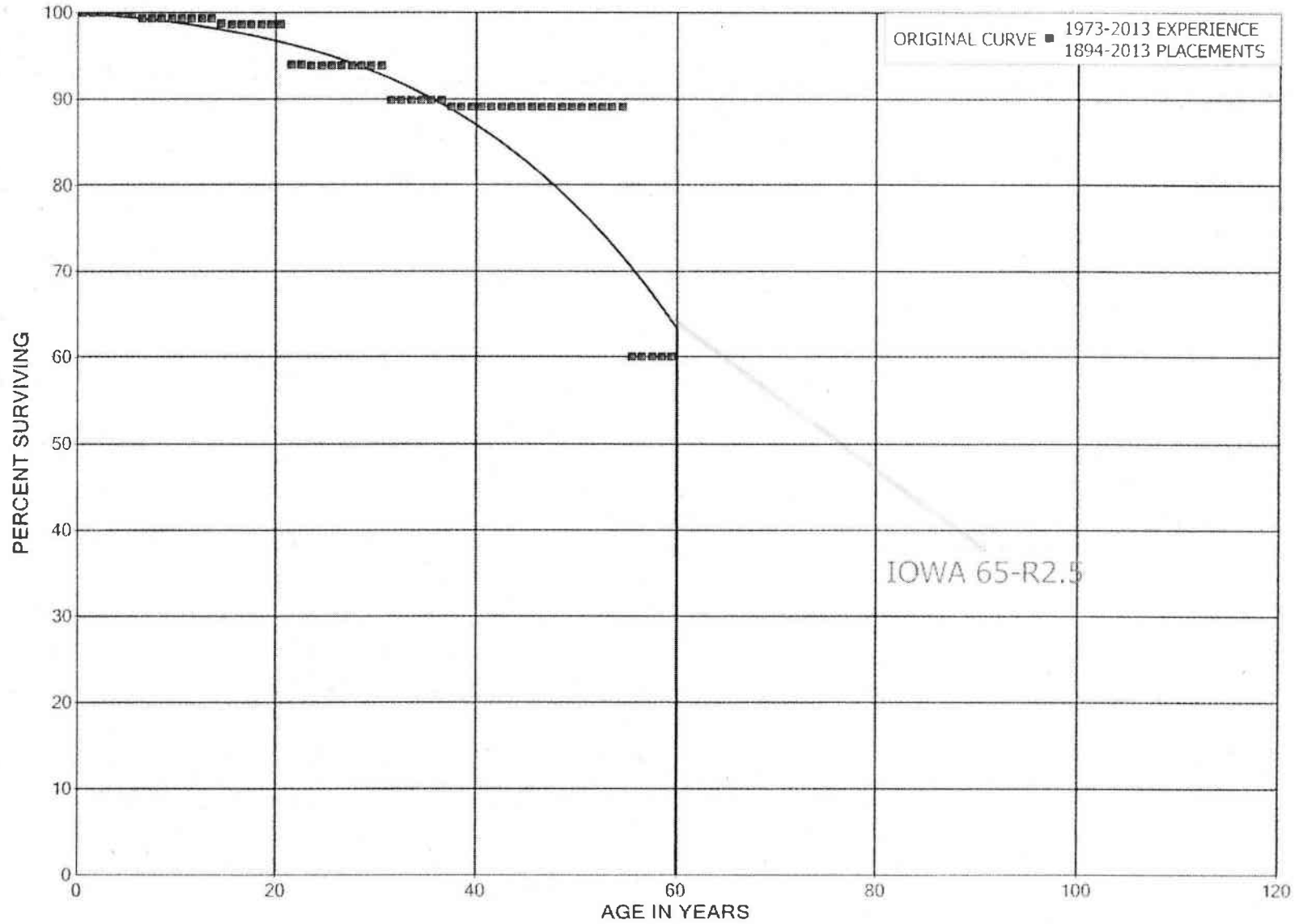
PLACEMENT BAND 1896-2010

EXPERIENCE BAND 1974-2013

AGE AT BEGIN OF INTERVAL	EXPOSURES AT BEGINNING OF AGE INTERVAL	RETIREMENTS DURING AGE INTERVAL	RETMT RATIO	SURV RATIO	PCT SURV BEGIN OF INTERVAL
79.5	84,472		0.0000	1.0000	97.25
80.5	84,472		0.0000	1.0000	97.25
81.5	84,472		0.0000	1.0000	97.25
82.5	84,472		0.0000	1.0000	97.25
83.5	84,472	8,617	0.1020	0.8980	97.25
84.5	75,855		0.0000	1.0000	87.33
85.5	71,718		0.0000	1.0000	87.33
86.5	33,339		0.0000	1.0000	87.33
87.5	33,339		0.0000	1.0000	87.33
88.5	33,339		0.0000	1.0000	87.33
89.5	33,339		0.0000	1.0000	87.33
90.5	33,339		0.0000	1.0000	87.33
91.5	33,339		0.0000	1.0000	87.33
92.5	33,339		0.0000	1.0000	87.33
93.5	33,339		0.0000	1.0000	87.33
94.5	33,339		0.0000	1.0000	87.33
95.5	33,339		0.0000	1.0000	87.33
96.5	33,339		0.0000	1.0000	87.33
97.5	33,339		0.0000	1.0000	87.33
98.5	33,339		0.0000	1.0000	87.33
99.5	33,339		0.0000	1.0000	87.33
100.5	33,339		0.0000	1.0000	87.33
101.5	33,339		0.0000	1.0000	87.33
102.5	33,339		0.0000	1.0000	87.33
103.5	33,339		0.0000	1.0000	87.33
104.5	6,209		0.0000	1.0000	87.33
105.5	6,209		0.0000	1.0000	87.33
106.5	6,209		0.0000	1.0000	87.33
107.5	6,209		0.0000	1.0000	87.33
108.5	6,209		0.0000	1.0000	87.33
109.5	6,209		0.0000	1.0000	87.33
110.5	6,209		0.0000	1.0000	87.33
111.5	6,209		0.0000	1.0000	87.33
112.5	6,209		0.0000	1.0000	87.33
113.5	6,209		0.0000	1.0000	87.33
114.5	6,209		0.0000	1.0000	87.33
115.5	6,209		0.0000	1.0000	87.33
116.5	6,209		0.0000	1.0000	87.33
117.5					87.33



SUEZ WATER PENNSYLVANIA, INC.
ACCOUNT 306 LAKE, RIVER AND OTHER INTAKES
ORIGINAL AND SMOOTH SURVIVOR CURVES



SUEZ WATER PENNSYLVANIA, INC.

ACCOUNT 306 LAKE, RIVER AND OTHER INTAKES

ORIGINAL LIFE TABLE

PLACEMENT BAND 1894-2013			EXPERIENCE BAND 1973-2013		
AGE AT BEGIN OF INTERVAL	EXPOSURES AT BEGINNING OF AGE INTERVAL	RETIREMENTS DURING AGE INTERVAL	RETMT RATIO	SURV RATIO	PCT SURV BEGIN OF INTERVAL
0.0	2,944,518		0.0000	1.0000	100.00
0.5	2,940,516		0.0000	1.0000	100.00
1.5	2,944,211		0.0000	1.0000	100.00
2.5	3,017,789		0.0000	1.0000	100.00
3.5	3,009,913	4,000	0.0013	0.9987	100.00
4.5	3,005,913		0.0000	1.0000	99.87
5.5	2,999,991	18,117	0.0060	0.9940	99.87
6.5	2,976,995		0.0000	1.0000	99.26
7.5	1,613,077		0.0000	1.0000	99.26
8.5	1,625,262		0.0000	1.0000	99.26
9.5	1,620,027		0.0000	1.0000	99.26
10.5	1,579,223		0.0000	1.0000	99.26
11.5	1,569,430		0.0000	1.0000	99.26
12.5	1,558,677		0.0000	1.0000	99.26
13.5	1,597,528	9,200	0.0058	0.9942	99.26
14.5	953,250	395	0.0004	0.9996	98.69
15.5	945,697		0.0000	1.0000	98.65
16.5	849,678		0.0000	1.0000	98.65
17.5	848,010		0.0000	1.0000	98.65
18.5	848,010		0.0000	1.0000	98.65
19.5	848,010		0.0000	1.0000	98.65
20.5	841,065	39,723	0.0472	0.9528	98.65
21.5	719,874	669	0.0009	0.9991	93.99
22.5	320,645	169	0.0005	0.9995	93.90
23.5	320,476	200	0.0006	0.9994	93.86
24.5	320,276		0.0000	1.0000	93.80
25.5	320,276		0.0000	1.0000	93.80
26.5	316,377		0.0000	1.0000	93.80
27.5	316,377		0.0000	1.0000	93.80
28.5	146,192		0.0000	1.0000	93.80
29.5	146,192		0.0000	1.0000	93.80
30.5	146,192	6,152	0.0421	0.9579	93.80
31.5	132,335		0.0000	1.0000	89.85
32.5	132,335		0.0000	1.0000	89.85
33.5	132,282		0.0000	1.0000	89.85
34.5	132,282		0.0000	1.0000	89.85
35.5	132,282		0.0000	1.0000	89.85
36.5	132,282	1,200	0.0091	0.9909	89.85
37.5	132,086		0.0000	1.0000	89.03
38.5	132,086		0.0000	1.0000	89.03

SUEZ WATER PENNSYLVANIA, INC.

ACCOUNT 306 LAKE, RIVER AND OTHER INTAKES

ORIGINAL LIFE TABLE, CONT.

PLACEMENT BAND 1894-2013

EXPERIENCE BAND 1973-2013

AGE AT BEGIN OF INTERVAL	EXPOSURES AT BEGINNING OF AGE INTERVAL	RETIREMENTS DURING AGE INTERVAL	RETMT RATIO	SURV RATIO	PCT SURV BEGIN OF INTERVAL
39.5	136,668		0.0000	1.0000	89.03
40.5	135,452		0.0000	1.0000	89.03
41.5	135,452		0.0000	1.0000	89.03
42.5	134,716		0.0000	1.0000	89.03
43.5	45,399		0.0000	1.0000	89.03
44.5	46,266		0.0000	1.0000	89.03
45.5	46,266		0.0000	1.0000	89.03
46.5	46,266		0.0000	1.0000	89.03
47.5	46,266		0.0000	1.0000	89.03
48.5	46,010		0.0000	1.0000	89.03
49.5	49,114		0.0000	1.0000	89.03
50.5	49,114		0.0000	1.0000	89.03
51.5	49,048		0.0000	1.0000	89.03
52.5	49,048		0.0000	1.0000	89.03
53.5	48,410		0.0000	1.0000	89.03
54.5	9,558	3,104	0.3248	0.6752	89.03
55.5	6,454		0.0000	1.0000	60.12
56.5	6,454		0.0000	1.0000	60.12
57.5	6,454		0.0000	1.0000	60.12
58.5	6,454		0.0000	1.0000	60.12
59.5	6,454		0.0000	1.0000	60.12
60.5	6,454		0.0000	1.0000	60.12
61.5	6,454		0.0000	1.0000	60.12
62.5	6,454		0.0000	1.0000	60.12
63.5	7,620		0.0000	1.0000	60.12
64.5	12,971		0.0000	1.0000	60.12
65.5	12,971		0.0000	1.0000	60.12
66.5	12,971		0.0000	1.0000	60.12
67.5	12,971		0.0000	1.0000	60.12
68.5	12,971		0.0000	1.0000	60.12
69.5	12,971		0.0000	1.0000	60.12
70.5	12,971		0.0000	1.0000	60.12
71.5	7,620		0.0000	1.0000	60.12
72.5	7,620		0.0000	1.0000	60.12
73.5	7,620		0.0000	1.0000	60.12
74.5	7,620		0.0000	1.0000	60.12
75.5	7,620		0.0000	1.0000	60.12
76.5	7,620		0.0000	1.0000	60.12
77.5	7,620		0.0000	1.0000	60.12
78.5	7,620		0.0000	1.0000	60.12

SUEZ WATER PENNSYLVANIA, INC.

ACCOUNT 306 LAKE, RIVER AND OTHER INTAKES

ORIGINAL LIFE TABLE, CONT.

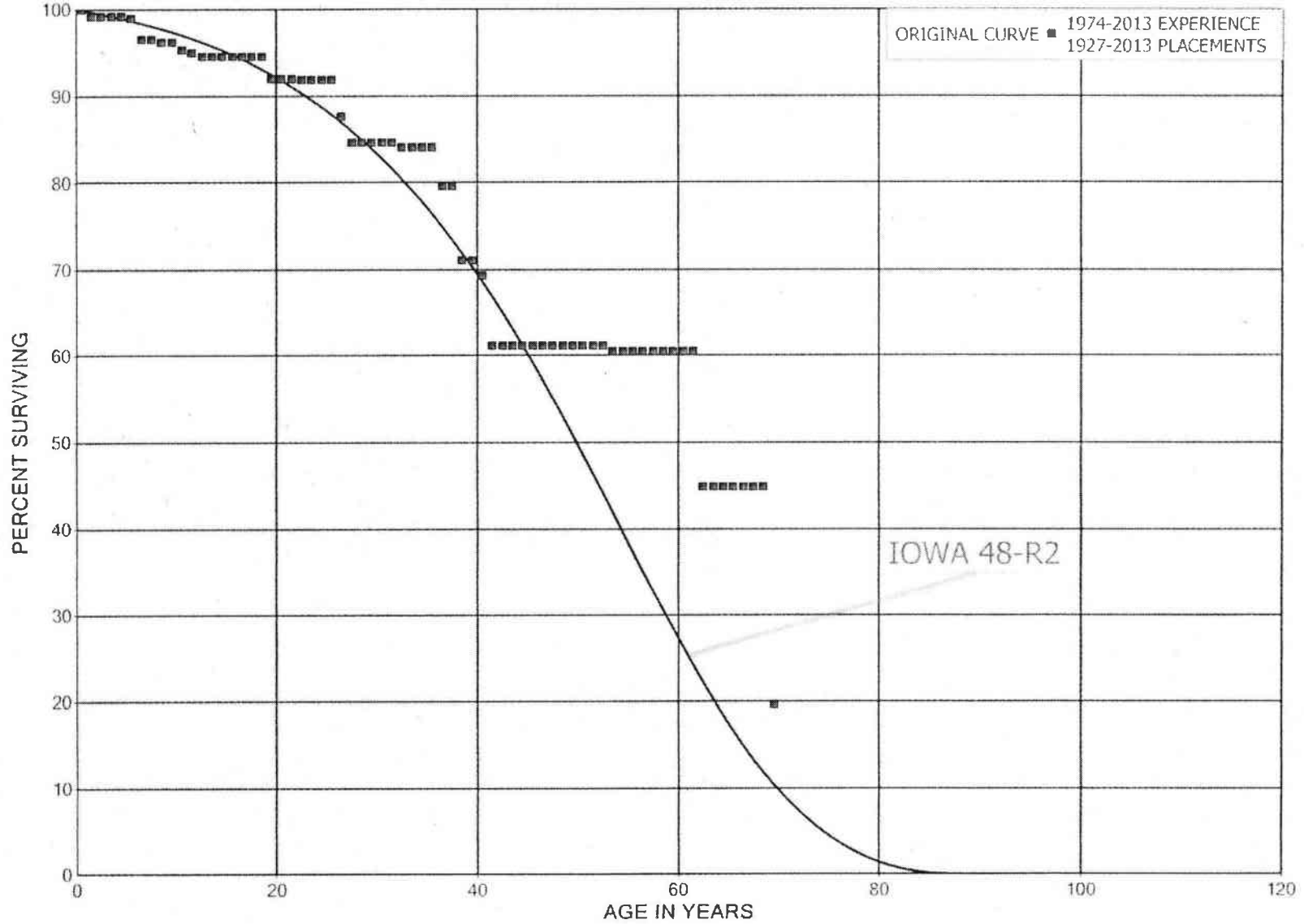
PLACEMENT BAND 1894-2013

EXPERIENCE BAND 1973-2013

AGE AT BEGIN OF INTERVAL	EXPOSURES AT BEGINNING OF AGE INTERVAL	RETIREMENTS DURING AGE INTERVAL	RETMT RATIO	SURV RATIO	PCT SURV BEGIN OF INTERVAL
79.5	7,620		0.0000	1.0000	60.12
80.5	3,039		0.0000	1.0000	60.12
81.5	3,039		0.0000	1.0000	60.12
82.5	3,039		0.0000	1.0000	60.12
83.5	3,039		0.0000	1.0000	60.12
84.5	3,039		0.0000	1.0000	60.12
85.5	1,166		0.0000	1.0000	60.12
86.5	1,166		0.0000	1.0000	60.12
87.5	1,166		0.0000	1.0000	60.12
88.5	1,166		0.0000	1.0000	60.12
89.5	1,166		0.0000	1.0000	60.12
90.5	1,166		0.0000	1.0000	60.12
91.5	1,166		0.0000	1.0000	60.12
92.5	1,166		0.0000	1.0000	60.12
93.5	1,166		0.0000	1.0000	60.12
94.5	1,166		0.0000	1.0000	60.12
95.5	1,166		0.0000	1.0000	60.12
96.5	1,166		0.0000	1.0000	60.12
97.5	1,166		0.0000	1.0000	60.12
98.5	1,166		0.0000	1.0000	60.12
99.5	1,166		0.0000	1.0000	60.12
100.5	1,166		0.0000	1.0000	60.12
101.5	1,166		0.0000	1.0000	60.12
102.5	1,166		0.0000	1.0000	60.12
103.5	1,166		0.0000	1.0000	60.12
104.5					60.12



SUEZ WATER PENNSYLVANIA, INC.
ACCOUNT 307 WELLS AND SPRINGS
ORIGINAL AND SMOOTH SURVIVOR CURVES



SUEZ WATER PENNSYLVANIA, INC.

ACCOUNT 307 WELLS AND SPRINGS

ORIGINAL LIFE TABLE

PLACEMENT BAND 1927-2013

EXPERIENCE BAND 1974-2013

AGE AT BEGIN OF INTERVAL	EXPOSURES AT BEGINNING OF AGE INTERVAL	RETIREMENTS DURING AGE INTERVAL	RETMT RATIO	SURV RATIO	PCT SURV BEGIN OF INTERVAL
0.0	942,970		0.0000	1.0000	100.00
0.5	944,884	8,000	0.0085	0.9915	100.00
1.5	943,905		0.0000	1.0000	99.15
2.5	933,769		0.0000	1.0000	99.15
3.5	872,440		0.0000	1.0000	99.15
4.5	868,381	1,555	0.0018	0.9982	99.15
5.5	861,729	21,708	0.0252	0.9748	98.98
6.5	832,389		0.0000	1.0000	96.48
7.5	807,412	2,366	0.0029	0.9971	96.48
8.5	683,765		0.0000	1.0000	96.20
9.5	575,905	5,228	0.0091	0.9909	96.20
10.5	583,818	2,120	0.0036	0.9964	95.33
11.5	595,880	2,699	0.0045	0.9955	94.98
12.5	558,410		0.0000	1.0000	94.55
13.5	540,614		0.0000	1.0000	94.55
14.5	542,188		0.0000	1.0000	94.55
15.5	490,816		0.0000	1.0000	94.55
16.5	483,371		0.0000	1.0000	94.55
17.5	490,802		0.0000	1.0000	94.55
18.5	473,022	13,080	0.0277	0.9723	94.55
19.5	352,786		0.0000	1.0000	91.94
20.5	281,356		0.0000	1.0000	91.94
21.5	277,223	330	0.0012	0.9988	91.94
22.5	217,292		0.0000	1.0000	91.83
23.5	217,292		0.0000	1.0000	91.83
24.5	180,328		0.0000	1.0000	91.83
25.5	142,637	6,503	0.0456	0.9544	91.83
26.5	109,683	3,719	0.0339	0.9661	87.64
27.5	62,231		0.0000	1.0000	84.67
28.5	51,006		0.0000	1.0000	84.67
29.5	41,861		0.0000	1.0000	84.67
30.5	41,861		0.0000	1.0000	84.67
31.5	39,153	263	0.0067	0.9933	84.67
32.5	37,150		0.0000	1.0000	84.10
33.5	37,150		0.0000	1.0000	84.10
34.5	37,150		0.0000	1.0000	84.10
35.5	33,168	1,751	0.0528	0.9472	84.10
36.5	29,745		0.0000	1.0000	79.66
37.5	29,745	3,195	0.1074	0.8926	79.66
38.5	27,352		0.0000	1.0000	71.10

SUEZ WATER PENNSYLVANIA, INC.

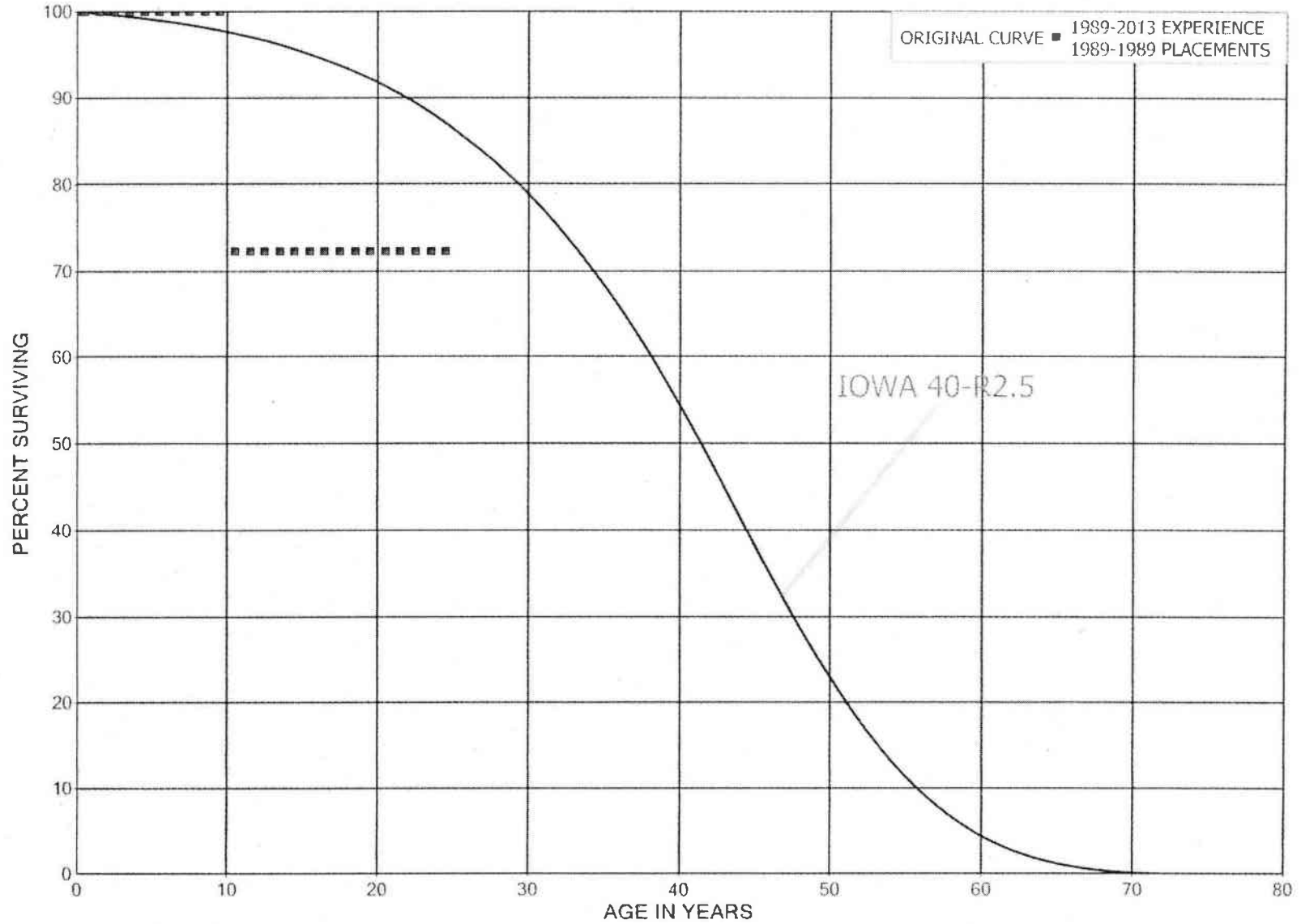
ACCOUNT 307 WELLS AND SPRINGS

ORIGINAL LIFE TABLE, CONT.

PLACEMENT BAND 1927-2013			EXPERIENCE BAND 1974-2013			
AGE AT BEGIN OF INTERVAL	EXPOSURES AT BEGINNING OF AGE INTERVAL	RETIREMENTS DURING AGE INTERVAL	RETMT RATIO	SURV RATIO	PCT SURV BEGIN OF INTERVAL	
39.5	30,568	802	0.0262	0.9738	71.10	
40.5	29,138	3,415	0.1172	0.8828	69.24	
41.5	24,970		0.0000	1.0000	61.12	
42.5	24,970		0.0000	1.0000	61.12	
43.5	23,396		0.0000	1.0000	61.12	
44.5	23,396		0.0000	1.0000	61.12	
45.5	23,396		0.0000	1.0000	61.12	
46.5	26,060		0.0000	1.0000	61.12	
47.5	18,760		0.0000	1.0000	61.12	
48.5	18,760		0.0000	1.0000	61.12	
49.5	18,760		0.0000	1.0000	61.12	
50.5	15,261		0.0000	1.0000	61.12	
51.5	15,261		0.0000	1.0000	61.12	
52.5	15,261	168	0.0110	0.9890	61.12	
53.5	15,093		0.0000	1.0000	60.45	
54.5	15,093		0.0000	1.0000	60.45	
55.5	15,093		0.0000	1.0000	60.45	
56.5	15,093		0.0000	1.0000	60.45	
57.5	15,093		0.0000	1.0000	60.45	
58.5	14,868		0.0000	1.0000	60.45	
59.5	11,572		0.0000	1.0000	60.45	
60.5	11,572		0.0000	1.0000	60.45	
61.5	7,739	2,000	0.2584	0.7416	60.45	
62.5	5,739		0.0000	1.0000	44.83	
63.5	5,739		0.0000	1.0000	44.83	
64.5	5,739		0.0000	1.0000	44.83	
65.5	5,739		0.0000	1.0000	44.83	
66.5	5,739		0.0000	1.0000	44.83	
67.5	4,736		0.0000	1.0000	44.83	
68.5	4,736	2,664	0.5625	0.4375	44.83	
69.5	2,072		0.0000	1.0000	19.61	
70.5	2,072		0.0000	1.0000	19.61	
71.5	2,072		0.0000	1.0000	19.61	
72.5	2,072		0.0000	1.0000	19.61	
73.5	2,072		0.0000	1.0000	19.61	
74.5	2,072		0.0000	1.0000	19.61	
75.5	2,072		0.0000	1.0000	19.61	
76.5					19.61	



SUEZ WATER PENNSYLVANIA, INC.
ACCOUNT 308 INFILTRATION GALLERIES AND TUNNELS
ORIGINAL AND SMOOTH SURVIVOR CURVES



SUEZ WATER PENNSYLVANIA, INC.

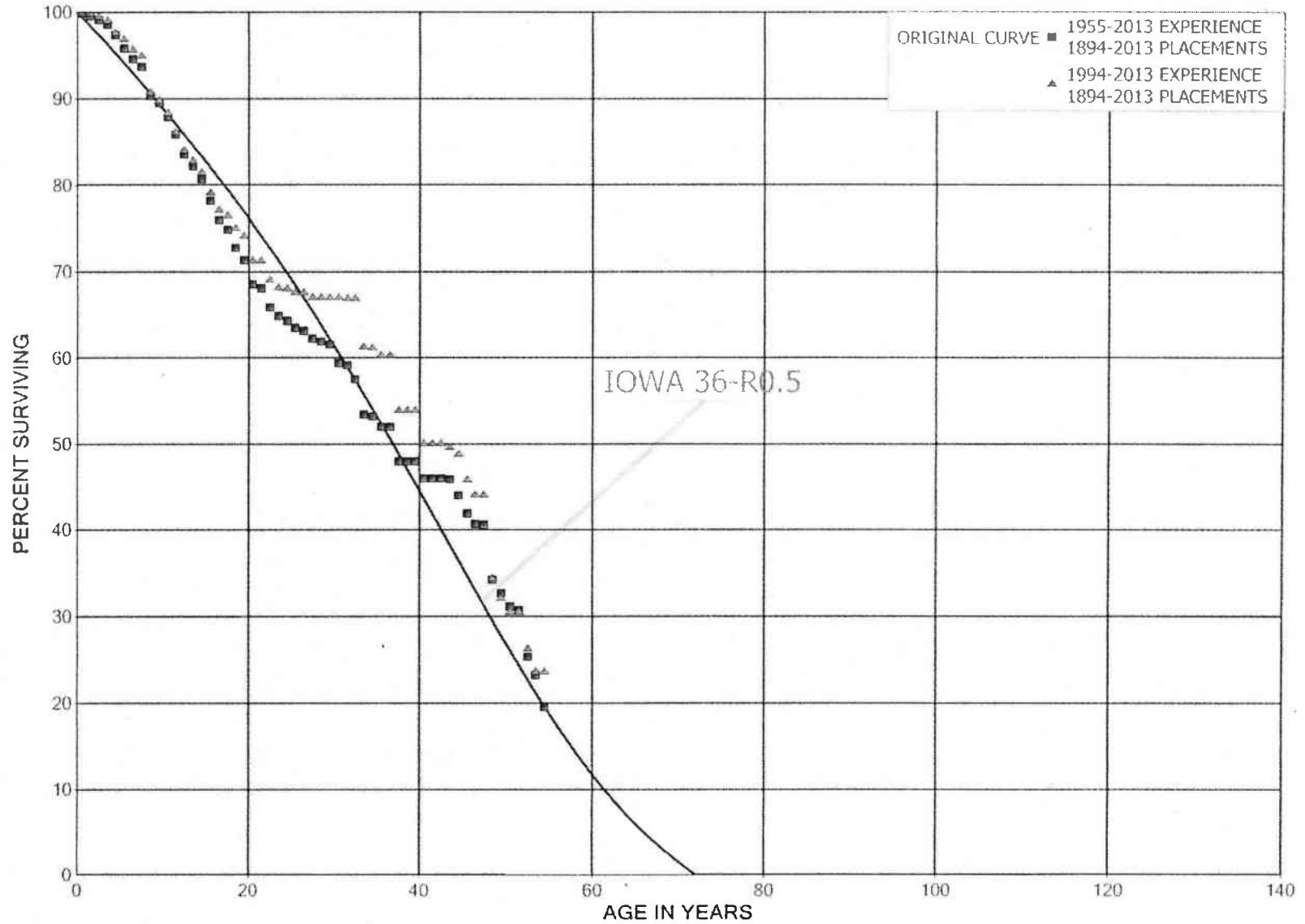
ACCOUNT 308 INFILTRATION GALLERIES AND TUNNELS

ORIGINAL LIFE TABLE

PLACEMENT BAND 1989-1989			EXPERIENCE BAND 1989-2013		
AGE AT BEGIN OF INTERVAL	EXPOSURES AT BEGINNING OF AGE INTERVAL	RETIREMENTS DURING AGE INTERVAL	RETMT RATIO	SURV RATIO	PCT SURV BEGIN OF INTERVAL
0.0	4,212		0.0000	1.0000	100.00
0.5	4,212		0.0000	1.0000	100.00
1.5	4,212		0.0000	1.0000	100.00
2.5	4,212		0.0000	1.0000	100.00
3.5	4,212		0.0000	1.0000	100.00
4.5	4,212		0.0000	1.0000	100.00
5.5	4,212		0.0000	1.0000	100.00
6.5	4,212		0.0000	1.0000	100.00
7.5	4,212		0.0000	1.0000	100.00
8.5	4,212		0.0000	1.0000	100.00
9.5	4,212	1,166	0.2768	0.7232	100.00
10.5	3,046		0.0000	1.0000	72.32
11.5	3,046		0.0000	1.0000	72.32
12.5	3,046		0.0000	1.0000	72.32
13.5	3,046		0.0000	1.0000	72.32
14.5	3,046		0.0000	1.0000	72.32
15.5	3,046		0.0000	1.0000	72.32
16.5	3,046		0.0000	1.0000	72.32
17.5	3,046		0.0000	1.0000	72.32
18.5	3,046		0.0000	1.0000	72.32
19.5	3,046		0.0000	1.0000	72.32
20.5	3,046		0.0000	1.0000	72.32
21.5	3,046		0.0000	1.0000	72.32
22.5	3,046		0.0000	1.0000	72.32
23.5	3,046		0.0000	1.0000	72.32
24.5					72.32



SUEZ WATER PENNSYLVANIA, INC.
ACCOUNT 311.2 PUMPING EQUIPMENT - ELECTRIC PUMPING EQUIPMENT
ORIGINAL AND SMOOTH SURVIVOR CURVES



SUEZ WATER PENNSYLVANIA, INC.

ACCOUNT 311.2 PUMPING EQUIPMENT - ELECTRIC PUMPING EQUIPMENT

ORIGINAL LIFE TABLE

PLACEMENT BAND 1894-2013

EXPERIENCE BAND 1955-2013

AGE AT BEGIN OF INTERVAL	EXPOSURES AT BEGINNING OF AGE INTERVAL	RETIREMENTS DURING AGE INTERVAL	RETMT RATIO	SURV RATIO	PCT SURV BEGIN OF INTERVAL
0.0	10,160,771	19,731	0.0019	0.9981	100.00
0.5	10,112,410	31,233	0.0031	0.9969	99.81
1.5	9,977,605	37,963	0.0038	0.9962	99.50
2.5	9,761,063	55,955	0.0057	0.9943	99.12
3.5	9,372,116	116,927	0.0125	0.9875	98.55
4.5	9,094,457	151,204	0.0166	0.9834	97.32
5.5	8,802,792	109,379	0.0124	0.9876	95.70
6.5	8,639,955	80,021	0.0093	0.9907	94.51
7.5	7,618,514	274,601	0.0360	0.9640	93.64
8.5	7,386,927	65,465	0.0089	0.9911	90.26
9.5	7,276,975	131,214	0.0180	0.9820	89.46
10.5	7,043,284	165,529	0.0235	0.9765	87.85
11.5	6,698,044	174,136	0.0260	0.9740	85.79
12.5	6,268,092	104,218	0.0166	0.9834	83.56
13.5	6,109,200	109,663	0.0180	0.9820	82.17
14.5	4,268,301	131,103	0.0307	0.9693	80.69
15.5	3,751,183	107,612	0.0287	0.9713	78.21
16.5	3,388,848	50,036	0.0148	0.9852	75.97
17.5	3,221,344	91,519	0.0284	0.9716	74.85
18.5	3,077,606	62,727	0.0204	0.9796	72.72
19.5	2,842,573	110,258	0.0388	0.9612	71.24
20.5	2,201,226	13,357	0.0061	0.9939	68.48
21.5	2,143,531	68,352	0.0319	0.9681	68.06
22.5	2,060,098	31,272	0.0152	0.9848	65.89
23.5	1,760,525	17,488	0.0099	0.9901	64.89
24.5	1,570,364	19,259	0.0123	0.9877	64.25
25.5	1,389,530	5,524	0.0040	0.9960	63.46
26.5	1,313,489	18,776	0.0143	0.9857	63.20
27.5	1,198,245	7,062	0.0059	0.9941	62.30
28.5	1,083,096	5,636	0.0052	0.9948	61.93
29.5	708,549	25,955	0.0366	0.9634	61.61
30.5	653,180	1,431	0.0022	0.9978	59.36
31.5	495,793	13,971	0.0282	0.9718	59.23
32.5	438,667	31,312	0.0714	0.9286	57.56
33.5	305,434	1,286	0.0042	0.9958	53.45
34.5	245,269	5,859	0.0239	0.9761	53.22
35.5	219,438		0.0000	1.0000	51.95
36.5	216,275	16,559	0.0766	0.9234	51.95
37.5	190,292		0.0000	1.0000	47.97
38.5	176,387		0.0000	1.0000	47.97

SUEZ WATER PENNSYLVANIA, INC.

ACCOUNT 311.2 PUMPING EQUIPMENT - ELECTRIC PUMPING EQUIPMENT

ORIGINAL LIFE TABLE, CONT.

PLACEMENT BAND 1894-2013

EXPERIENCE BAND 1955-2013

AGE AT BEGIN OF INTERVAL	EXPOSURES AT BEGINNING OF AGE INTERVAL	RETIREMENTS DURING AGE INTERVAL	RETMT RATIO	SURV RATIO	PCT SURV BEGIN OF INTERVAL
39.5	146,734	6,006	0.0409	0.9591	47.97
40.5	137,801		0.0000	1.0000	46.01
41.5	132,620		0.0000	1.0000	46.01
42.5	127,203	500	0.0039	0.9961	46.01
43.5	126,703	5,295	0.0418	0.9582	45.83
44.5	121,408	5,682	0.0468	0.9532	43.91
45.5	115,161	3,276	0.0284	0.9716	41.86
46.5	111,585	505	0.0045	0.9955	40.67
47.5	89,418	14,026	0.1569	0.8431	40.48
48.5	74,160	3,200	0.0431	0.9569	34.13
49.5	66,541	3,349	0.0503	0.9497	32.66
50.5	51,725	651	0.0126	0.9874	31.02
51.5	47,596	8,257	0.1735	0.8265	30.63
52.5	39,222	3,386	0.0863	0.9137	25.31
53.5	35,811	5,537	0.1546	0.8454	23.13
54.5	30,115	38	0.0013	0.9987	19.55
55.5	27,281	195	0.0071	0.9929	19.53
56.5	26,985		0.0000	1.0000	19.39
57.5	26,985	318	0.0118	0.9882	19.39
58.5	25,132	54	0.0021	0.9979	19.16
59.5	24,547		0.0000	1.0000	19.12
60.5	25,959		0.0000	1.0000	19.12
61.5	25,958		0.0000	1.0000	19.12
62.5	25,950	55	0.0021	0.9979	19.12
63.5	13,742		0.0000	1.0000	19.08
64.5	13,742		0.0000	1.0000	19.08
65.5	13,742		0.0000	1.0000	19.08
66.5	13,674		0.0000	1.0000	19.08
67.5	13,356		0.0000	1.0000	19.08
68.5	13,356	38	0.0028	0.9972	19.08
69.5	13,318	2,200	0.1652	0.8348	19.02
70.5	10,940		0.0000	1.0000	15.88
71.5	10,940		0.0000	1.0000	15.88
72.5	10,940		0.0000	1.0000	15.88
73.5	10,940	138	0.0126	0.9874	15.88
74.5	10,802		0.0000	1.0000	15.68
75.5	10,802		0.0000	1.0000	15.68
76.5	10,802		0.0000	1.0000	15.68
77.5	10,802		0.0000	1.0000	15.68
78.5	10,802		0.0000	1.0000	15.68

SUEZ WATER PENNSYLVANIA, INC.

ACCOUNT 311.2 PUMPING EQUIPMENT - ELECTRIC PUMPING EQUIPMENT

ORIGINAL LIFE TABLE, CONT.

PLACEMENT BAND 1894-2013			EXPERIENCE BAND 1955-2013		
AGE AT BEGIN OF INTERVAL	EXPOSURES AT BEGINNING OF AGE INTERVAL	RETIREMENTS DURING AGE INTERVAL	RETMT RATIO	SURV RATIO	PCT SURV BEGIN OF INTERVAL
79.5	10,802		0.0000	1.0000	15.68
80.5	10,802		0.0000	1.0000	15.68
81.5	10,802		0.0000	1.0000	15.68
82.5	10,801		0.0000	1.0000	15.68
83.5	10,801		0.0000	1.0000	15.68
84.5	10,801		0.0000	1.0000	15.68
85.5	9,797		0.0000	1.0000	15.68
86.5	9,669		0.0000	1.0000	15.68
87.5	8,645		0.0000	1.0000	15.68
88.5	8,645		0.0000	1.0000	15.68
89.5	8,645	28	0.0032	0.9968	15.68
90.5	8,617		0.0000	1.0000	15.63
91.5	8,617		0.0000	1.0000	15.63
92.5	1,385		0.0000	1.0000	15.63
93.5	1,385		0.0000	1.0000	15.63
94.5	1,384		0.0000	1.0000	15.63
95.5	1,384	113	0.0816	0.9184	15.63
96.5	1,271		0.0000	1.0000	14.36
97.5	1,271		0.0000	1.0000	14.36
98.5	1,271		0.0000	1.0000	14.36
99.5	1,271		0.0000	1.0000	14.36
100.5	1,271		0.0000	1.0000	14.36
101.5	1,271		0.0000	1.0000	14.36
102.5	1,271		0.0000	1.0000	14.36
103.5	1,271		0.0000	1.0000	14.36
104.5	1,271		0.0000	1.0000	14.36
105.5	1,271	720	0.5663	0.4337	14.36
106.5	551		0.0000	1.0000	6.23
107.5	551		0.0000	1.0000	6.23
108.5	551		0.0000	1.0000	6.23
109.5	551		0.0000	1.0000	6.23
110.5	551		0.0000	1.0000	6.23
111.5	551		0.0000	1.0000	6.23
112.5	551		0.0000	1.0000	6.23
113.5	551		0.0000	1.0000	6.23
114.5	551		0.0000	1.0000	6.23
115.5	551		0.0000	1.0000	6.23
116.5	551		0.0000	1.0000	6.23
117.5	551		0.0000	1.0000	6.23
118.5	551		0.0000	1.0000	6.23
119.5					6.23

SUEZ WATER PENNSYLVANIA, INC.

ACCOUNT 311.2 PUMPING EQUIPMENT - ELECTRIC PUMPING EQUIPMENT

ORIGINAL LIFE TABLE

PLACEMENT BAND 1894-2013

EXPERIENCE BAND 1994-2013

AGE AT BEGIN OF INTERVAL	EXPOSURES AT BEGINNING OF AGE INTERVAL	RETIREMENTS DURING AGE INTERVAL	RETMT RATIO	SURV RATIO	PCT SURV BEGIN OF INTERVAL
0.0	6,221,842	1,631	0.0003	0.9997	100.00
0.5	6,783,751	9,813	0.0014	0.9986	99.97
1.5	6,733,939	26,518	0.0039	0.9961	99.83
2.5	6,821,820	30,376	0.0045	0.9955	99.44
3.5	6,745,530	98,824	0.0147	0.9853	98.99
4.5	6,725,919	54,713	0.0081	0.9919	97.54
5.5	6,790,621	83,511	0.0123	0.9877	96.75
6.5	6,713,036	48,083	0.0072	0.9928	95.56
7.5	5,914,200	266,163	0.0450	0.9550	94.88
8.5	5,807,613	53,118	0.0091	0.9909	90.61
9.5	6,112,143	104,707	0.0171	0.9829	89.78
10.5	5,941,050	144,942	0.0244	0.9756	88.24
11.5	5,825,951	143,011	0.0245	0.9755	86.09
12.5	5,499,163	81,395	0.0148	0.9852	83.97
13.5	5,463,230	90,056	0.0165	0.9835	82.73
14.5	3,706,061	104,554	0.0282	0.9718	81.37
15.5	3,237,296	84,056	0.0260	0.9740	79.07
16.5	2,899,437	24,043	0.0083	0.9917	77.02
17.5	2,824,202	51,148	0.0181	0.9819	76.38
18.5	2,735,978	33,786	0.0123	0.9877	75.00
19.5	2,578,771	99,727	0.0387	0.9613	74.07
20.5	1,949,570		0.0000	1.0000	71.21
21.5	1,912,922	60,983	0.0319	0.9681	71.21
22.5	1,842,898	23,657	0.0128	0.9872	68.94
23.5	1,550,393	3,200	0.0021	0.9979	68.05
24.5	1,374,520	8,674	0.0063	0.9937	67.91
25.5	1,167,582		0.0000	1.0000	67.48
26.5	1,091,823	8,222	0.0075	0.9925	67.48
27.5	1,006,238		0.0000	1.0000	66.97
28.5	895,935	500	0.0006	0.9994	66.97
29.5	560,645		0.0000	1.0000	66.94
30.5	543,297	500	0.0009	0.9991	66.94
31.5	390,318	500	0.0013	0.9987	66.87
32.5	351,296	28,685	0.0817	0.9183	66.79
33.5	210,816	675	0.0032	0.9968	61.33
34.5	156,743	2,098	0.0134	0.9866	61.14
35.5	145,514		0.0000	1.0000	60.32
36.5	142,451	15,435	0.1084	0.8916	60.32
37.5	117,592		0.0000	1.0000	53.78
38.5	104,538		0.0000	1.0000	53.78

SUEZ WATER PENNSYLVANIA, INC.

ACCOUNT 311.2 PUMPING EQUIPMENT - ELECTRIC PUMPING EQUIPMENT

ORIGINAL LIFE TABLE, CONT.

PLACEMENT BAND 1894-2013

EXPERIENCE BAND 1994-2013

AGE AT BEGIN OF INTERVAL	EXPOSURES AT BEGINNING OF AGE INTERVAL	RETIREMENTS DURING AGE INTERVAL	RETMT RATIO	SURV RATIO	PCT SURV BEGIN OF INTERVAL
39.5	75,417	5,322	0.0706	0.9294	53.78
40.5	67,168		0.0000	1.0000	49.99
41.5	61,988		0.0000	1.0000	49.99
42.5	56,579	500	0.0088	0.9912	49.99
43.5	92,138	1,500	0.0163	0.9837	49.55
44.5	90,638	5,682	0.0627	0.9373	48.74
45.5	84,391	3,276	0.0388	0.9612	45.69
46.5	80,883		0.0000	1.0000	43.91
47.5	62,747	13,830	0.2204	0.7796	43.91
48.5	47,686	3,200	0.0671	0.9329	34.23
49.5	40,067	2,000	0.0499	0.9501	31.94
50.5	26,778		0.0000	1.0000	30.34
51.5	23,301	3,210	0.1377	0.8623	30.34
52.5	19,974	2,000	0.1001	0.8999	26.16
53.5	17,949		0.0000	1.0000	23.54
54.5	17,790		0.0000	1.0000	23.54
55.5	14,994	100	0.0067	0.9933	23.54
56.5	14,793		0.0000	1.0000	23.39
57.5	14,793		0.0000	1.0000	23.39
58.5	13,258		0.0000	1.0000	23.39
59.5	12,727		0.0000	1.0000	23.39
60.5	12,727		0.0000	1.0000	23.39
61.5	12,726		0.0000	1.0000	23.39
62.5	12,718		0.0000	1.0000	23.39
63.5	565		0.0000	1.0000	23.39
64.5	565		0.0000	1.0000	23.39
65.5	3,769		0.0000	1.0000	23.39
66.5	3,829		0.0000	1.0000	23.39
67.5	4,535		0.0000	1.0000	23.39
68.5	4,535		0.0000	1.0000	23.39
69.5	4,535	2,200	0.4851	0.5149	23.39
70.5	2,157		0.0000	1.0000	12.04
71.5	2,157		0.0000	1.0000	12.04
72.5	9,389		0.0000	1.0000	12.04
73.5	9,389		0.0000	1.0000	12.04
74.5	9,390		0.0000	1.0000	12.04
75.5	9,390		0.0000	1.0000	12.04
76.5	9,390		0.0000	1.0000	12.04
77.5	9,390		0.0000	1.0000	12.04
78.5	9,390		0.0000	1.0000	12.04

SUEZ WATER PENNSYLVANIA, INC.

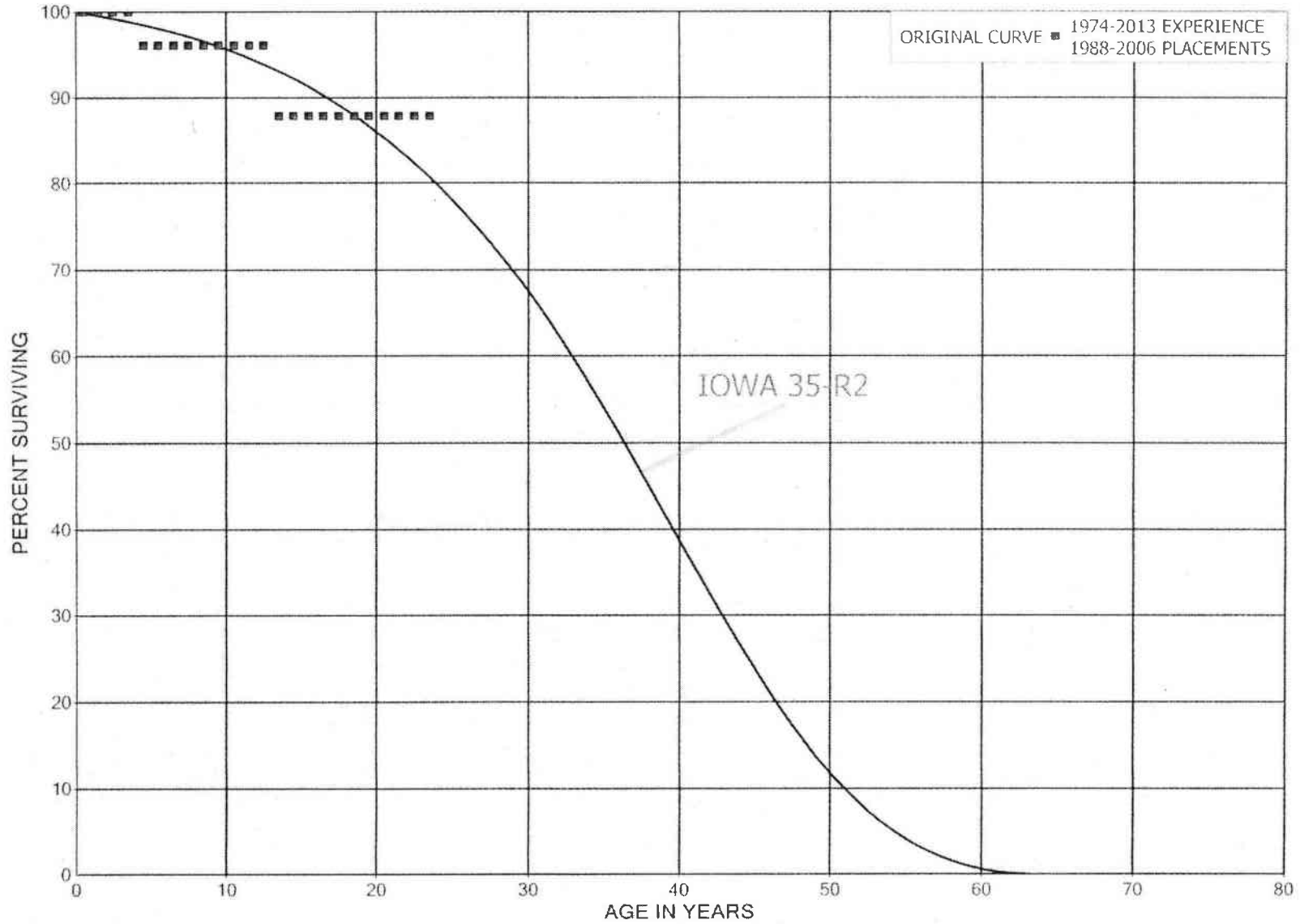
ACCOUNT 311.2 PUMPING EQUIPMENT - ELECTRIC PUMPING EQUIPMENT

ORIGINAL LIFE TABLE, CONT.

PLACEMENT BAND 1894-2013			EXPERIENCE BAND 1994-2013		
AGE AT BEGIN OF INTERVAL	EXPOSURES AT BEGINNING OF AGE INTERVAL	RETIREMENTS DURING AGE INTERVAL	RETMT RATIO	SURV RATIO	PCT SURV BEGIN OF INTERVAL
79.5	9,390		0.0000	1.0000	12.04
80.5	9,390		0.0000	1.0000	12.04
81.5	9,390		0.0000	1.0000	12.04
82.5	9,389		0.0000	1.0000	12.04
83.5	9,389		0.0000	1.0000	12.04
84.5	9,389		0.0000	1.0000	12.04
85.5	8,385		0.0000	1.0000	12.04
86.5	8,257		0.0000	1.0000	12.04
87.5	7,233		0.0000	1.0000	12.04
88.5	7,233		0.0000	1.0000	12.04
89.5	7,233		0.0000	1.0000	12.04
90.5	7,233		0.0000	1.0000	12.04
91.5	7,233		0.0000	1.0000	12.04
92.5	0		0.0000	1.0000	12.04
93.5	0		0.0000	1.0000	12.04
94.5					12.04
95.5					
96.5					
97.5					
98.5					
99.5	1,271		0.0000		
100.5	1,271		0.0000		
101.5	1,271		0.0000		
102.5	1,271		0.0000		
103.5	1,271		0.0000		
104.5	1,271		0.0000		
105.5	1,271	720	0.5663		
106.5	551		0.0000		
107.5	551		0.0000		
108.5	551		0.0000		
109.5	551		0.0000		
110.5	551		0.0000		
111.5	551		0.0000		
112.5	551		0.0000		
113.5	551		0.0000		
114.5	551		0.0000		
115.5	551		0.0000		
116.5	551		0.0000		
117.5	551		0.0000		
118.5	551		0.0000		
119.5					



SUEZ WATER PENNSYLVANIA, INC.
ACCOUNT 311.3 PUMPING EQUIPMENT - OIL ENGINE PUMPING EQUIPMENT
ORIGINAL AND SMOOTH SURVIVOR CURVES



SUEZ WATER PENNSYLVANIA, INC.

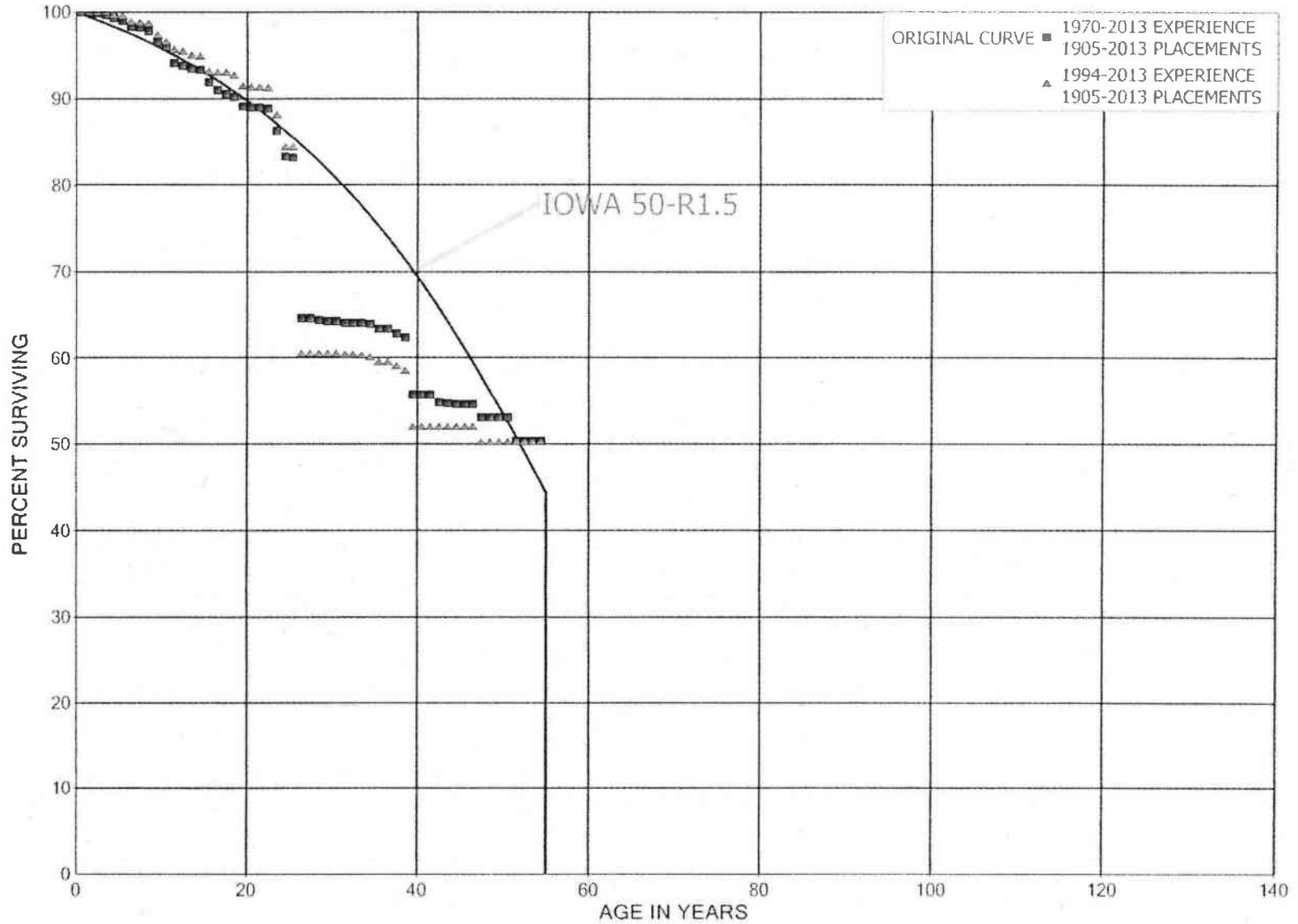
ACCOUNT 311.3 PUMPING EQUIPMENT - OIL ENGINE PUMPING EQUIPMENT

ORIGINAL LIFE TABLE

PLACEMENT BAND 1988-2006			EXPERIENCE BAND 1974-2013		
AGE AT BEGIN OF INTERVAL	EXPOSURES AT BEGINNING OF AGE INTERVAL	RETIREMENTS DURING AGE INTERVAL	RETMT RATIO	SURV RATIO	PCT SURV BEGIN OF INTERVAL
0.0	351,376		0.0000	1.0000	100.00
0.5	351,376		0.0000	1.0000	100.00
1.5	351,376		0.0000	1.0000	100.00
2.5	351,376		0.0000	1.0000	100.00
3.5	351,376	13,874	0.0395	0.9605	100.00
4.5	337,502		0.0000	1.0000	96.05
5.5	337,502		0.0000	1.0000	96.05
6.5	337,502		0.0000	1.0000	96.05
7.5	274,373		0.0000	1.0000	96.05
8.5	274,373		0.0000	1.0000	96.05
9.5	274,373		0.0000	1.0000	96.05
10.5	272,774		0.0000	1.0000	96.05
11.5	272,774		0.0000	1.0000	96.05
12.5	272,774	23,346	0.0856	0.9144	96.05
13.5	249,428		0.0000	1.0000	87.83
14.5	249,428		0.0000	1.0000	87.83
15.5	249,428		0.0000	1.0000	87.83
16.5	249,428		0.0000	1.0000	87.83
17.5	249,428		0.0000	1.0000	87.83
18.5	249,428		0.0000	1.0000	87.83
19.5	249,428		0.0000	1.0000	87.83
20.5	16,798		0.0000	1.0000	87.83
21.5	16,798		0.0000	1.0000	87.83
22.5	16,798		0.0000	1.0000	87.83
23.5	886		0.0000	1.0000	87.83
24.5	886		0.0000	1.0000	87.83
25.5					87.83



SUEZ WATER PENNSYLVANIA, INC.
ACCOUNT 320.1 WATER TREATMENT PLANT - STRUCTURES AND IMPROVEMENTS
ORIGINAL AND SMOOTH SURVIVOR CURVES



SUEZ WATER PENNSYLVANIA, INC.

ACCOUNT 320.1 WATER TREATMENT PLANT - STRUCTURES AND IMPROVEMENTS

ORIGINAL LIFE TABLE

PLACEMENT BAND 1905-2013

EXPERIENCE BAND 1970-2013

AGE AT BEGIN OF INTERVAL	EXPOSURES AT BEGINNING OF AGE INTERVAL	RETIREMENTS DURING AGE INTERVAL	RETMT RATIO	SURV RATIO	PCT SURV BEGIN OF INTERVAL
0.0	25,446,163	7,877	0.0003	0.9997	100.00
0.5	25,316,746	20,007	0.0008	0.9992	99.97
1.5	25,235,418	27,045	0.0011	0.9989	99.89
2.5	23,644,605	38,022	0.0016	0.9984	99.78
3.5	23,396,180	67,013	0.0029	0.9971	99.62
4.5	23,267,228	81,046	0.0035	0.9965	99.34
5.5	23,017,041	167,508	0.0073	0.9927	98.99
6.5	22,601,134	34,085	0.0015	0.9985	98.27
7.5	13,881,674	58,608	0.0042	0.9958	98.12
8.5	9,111,708	108,633	0.0119	0.9881	97.71
9.5	8,778,602	57,956	0.0066	0.9934	96.54
10.5	8,621,515	168,862	0.0196	0.9804	95.91
11.5	8,280,867	21,933	0.0026	0.9974	94.03
12.5	8,155,245	37,259	0.0046	0.9954	93.78
13.5	8,056,653	5,744	0.0007	0.9993	93.35
14.5	7,618,260	121,678	0.0160	0.9840	93.28
15.5	7,282,425	66,898	0.0092	0.9908	91.79
16.5	7,192,011	39,543	0.0055	0.9945	90.95
17.5	6,958,914	23,087	0.0033	0.9967	90.45
18.5	6,931,215	81,209	0.0117	0.9883	90.15
19.5	6,662,400	13,278	0.0020	0.9980	89.09
20.5	3,392,694		0.0000	1.0000	88.92
21.5	2,880,448	3,828	0.0013	0.9987	88.92
22.5	2,582,466	73,225	0.0284	0.9716	88.80
23.5	2,224,065	76,224	0.0343	0.9657	86.28
24.5	2,097,880	2,369	0.0011	0.9989	83.32
25.5	2,022,869	452,742	0.2238	0.7762	83.23
26.5	1,541,972		0.0000	1.0000	64.60
27.5	1,529,039	4,072	0.0027	0.9973	64.60
28.5	1,511,028	2,800	0.0019	0.9981	64.43
29.5	1,461,508	1,300	0.0009	0.9991	64.31
30.5	1,395,876	2,970	0.0021	0.9979	64.25
31.5	1,346,271		0.0000	1.0000	64.12
32.5	1,293,273	220	0.0002	0.9998	64.12
33.5	924,237	3,000	0.0032	0.9968	64.11
34.5	908,040	7,761	0.0085	0.9915	63.90
35.5	848,874		0.0000	1.0000	63.35
36.5	791,737	6,225	0.0079	0.9921	63.35
37.5	545,104	4,042	0.0074	0.9926	62.85
38.5	520,045	55,259	0.1063	0.8937	62.39

SUEZ WATER PENNSYLVANIA, INC.

ACCOUNT 320.1 WATER TREATMENT PLANT - STRUCTURES AND IMPROVEMENTS

ORIGINAL LIFE TABLE, CONT.

PLACEMENT BAND 1905-2013			EXPERIENCE BAND 1970-2013		
AGE AT BEGIN OF INTERVAL	EXPOSURES AT BEGINNING OF AGE INTERVAL	RETIREMENTS DURING AGE INTERVAL	RETMT RATIO	SURV RATIO	PCT SURV BEGIN OF INTERVAL
39.5	432,556		0.0000	1.0000	55.76
40.5	458,848		0.0000	1.0000	55.76
41.5	457,864	7,808	0.0171	0.9829	55.76
42.5	393,293	973	0.0025	0.9975	54.81
43.5	392,320	20	0.0001	0.9999	54.67
44.5	392,300		0.0000	1.0000	54.67
45.5	390,466		0.0000	1.0000	54.67
46.5	390,466	11,400	0.0292	0.9708	54.67
47.5	389,238		0.0000	1.0000	53.07
48.5	386,770		0.0000	1.0000	53.07
49.5	163,320		0.0000	1.0000	53.07
50.5	163,320	8,718	0.0534	0.9466	53.07
51.5	145,287		0.0000	1.0000	50.24
52.5	145,494		0.0000	1.0000	50.24
53.5	139,270		0.0000	1.0000	50.24
54.5	136,514		0.0000	1.0000	50.24
55.5	81,766		0.0000	1.0000	50.24
56.5	81,765		0.0000	1.0000	50.24
57.5	115,349	157	0.0014	0.9986	50.24
58.5	114,368	2,000	0.0175	0.9825	50.17
59.5	112,162	250	0.0022	0.9978	49.29
60.5	126,063		0.0000	1.0000	49.18
61.5	137,241	7,357	0.0536	0.9464	49.18
62.5	129,833		0.0000	1.0000	46.55
63.5	114,763		0.0000	1.0000	46.55
64.5	318,885		0.0000	1.0000	46.55
65.5	318,885		0.0000	1.0000	46.55
66.5	314,160	695	0.0022	0.9978	46.55
67.5	313,464	17,412	0.0555	0.9445	46.44
68.5	296,052	3,835	0.0130	0.9870	43.86
69.5	292,217		0.0000	1.0000	43.30
70.5	292,217	1,050	0.0036	0.9964	43.30
71.5	291,167		0.0000	1.0000	43.14
72.5	291,167	3,853	0.0132	0.9868	43.14
73.5	287,314		0.0000	1.0000	42.57
74.5	287,314	653	0.0023	0.9977	42.57
75.5	286,661	3,353	0.0117	0.9883	42.47
76.5	283,308	153	0.0005	0.9995	41.98
77.5	283,155	2,455	0.0087	0.9913	41.95
78.5	280,700		0.0000	1.0000	41.59

SUEZ WATER PENNSYLVANIA, INC.

ACCOUNT 320.1 WATER TREATMENT PLANT - STRUCTURES AND IMPROVEMENTS

ORIGINAL LIFE TABLE, CONT.

PLACEMENT BAND 1905-2013			EXPERIENCE BAND 1970-2013			
AGE AT BEGIN OF INTERVAL	EXPOSURES AT BEGINNING OF AGE INTERVAL	RETIREMENTS DURING AGE INTERVAL	RETMT RATIO	SURV RATIO	PCT SURV BEGIN OF INTERVAL	
79.5	280,699	1,143	0.0041	0.9959	41.59	
80.5	272,721		0.0000	1.0000	41.42	
81.5	272,721		0.0000	1.0000	41.42	
82.5	272,540	800	0.0029	0.9971	41.42	
83.5	271,673		0.0000	1.0000	41.30	
84.5	254,255	300	0.0012	0.9988	41.30	
85.5	253,899	300	0.0012	0.9988	41.25	
86.5	253,599	11,072	0.0437	0.9563	41.20	
87.5	242,527		0.0000	1.0000	39.40	
88.5	242,527		0.0000	1.0000	39.40	
89.5	242,527		0.0000	1.0000	39.40	
90.5	242,527		0.0000	1.0000	39.40	
91.5	235,202		0.0000	1.0000	39.40	
92.5	234,702	204,122	0.8697	0.1303	39.40	
93.5	30,580		0.0000	1.0000	5.13	
94.5	30,580		0.0000	1.0000	5.13	
95.5	30,580		0.0000	1.0000	5.13	
96.5	30,372		0.0000	1.0000	5.13	
97.5	30,372		0.0000	1.0000	5.13	
98.5	30,372		0.0000	1.0000	5.13	
99.5	30,372	24	0.0008	0.9992	5.13	
100.5	30,348		0.0000	1.0000	5.13	
101.5	14,906		0.0000	1.0000	5.13	
102.5	14,906		0.0000	1.0000	5.13	
103.5	14,906	8	0.0005	0.9995	5.13	
104.5	4,951		0.0000	1.0000	5.13	
105.5					5.13	

SUEZ WATER PENNSYLVANIA, INC.

ACCOUNT 320.1 WATER TREATMENT PLANT - STRUCTURES AND IMPROVEMENTS

ORIGINAL LIFE TABLE

PLACEMENT BAND 1905-2013

EXPERIENCE BAND 1994-2013

AGE AT BEGIN OF INTERVAL	EXPOSURES AT BEGINNING OF AGE INTERVAL	RETIREMENTS DURING AGE INTERVAL	RETMT RATIO	SURV RATIO	PCT SURV BEGIN OF INTERVAL
0.0	18,269,520		0.0000	1.0000	100.00
0.5	21,752,321	6,690	0.0003	0.9997	100.00
1.5	22,197,762	25,280	0.0011	0.9989	99.97
2.5	20,921,644	4,800	0.0002	0.9998	99.86
3.5	21,056,634	59,271	0.0028	0.9972	99.83
4.5	20,986,294	43,666	0.0021	0.9979	99.55
5.5	20,554,845	132,883	0.0065	0.9935	99.34
6.5	20,201,718	12,353	0.0006	0.9994	98.70
7.5	11,549,143	12,219	0.0011	0.9989	98.64
8.5	7,298,450	100,286	0.0137	0.9863	98.54
9.5	7,024,461	57,956	0.0083	0.9917	97.18
10.5	6,963,895	64,463	0.0093	0.9907	96.38
11.5	6,714,580	16,374	0.0024	0.9976	95.49
12.5	6,647,352	32,202	0.0048	0.9952	95.26
13.5	6,977,849	5,744	0.0008	0.9992	94.80
14.5	6,551,828	121,678	0.0186	0.9814	94.72
15.5	6,311,052	6,500	0.0010	0.9990	92.96
16.5	6,345,172	5,564	0.0009	0.9991	92.86
17.5	6,416,794	20,600	0.0032	0.9968	92.78
18.5	6,413,756	80,828	0.0126	0.9874	92.48
19.5	6,162,548	13,078	0.0021	0.9979	91.32
20.5	2,910,298		0.0000	1.0000	91.12
21.5	2,399,092	1,314	0.0005	0.9995	91.12
22.5	2,154,690	73,063	0.0339	0.9661	91.07
23.5	1,796,450	76,224	0.0424	0.9576	87.99
24.5	1,670,265		0.0000	1.0000	84.25
25.5	1,599,457	452,074	0.2826	0.7174	84.25
26.5	1,119,228		0.0000	1.0000	60.44
27.5	1,106,295		0.0000	1.0000	60.44
28.5	1,098,870		0.0000	1.0000	60.44
29.5	1,295,966	1,300	0.0010	0.9990	60.44
30.5	1,230,334	2,970	0.0024	0.9976	60.38
31.5	1,197,805		0.0000	1.0000	60.23
32.5	1,144,807	220	0.0002	0.9998	60.23
33.5	787,195	3,000	0.0038	0.9962	60.22
34.5	776,144	7,761	0.0100	0.9900	59.99
35.5	818,490		0.0000	1.0000	59.39
36.5	754,316	6,225	0.0083	0.9917	59.39
37.5	507,683	4,042	0.0080	0.9920	58.90
38.5	483,267	54,749	0.1133	0.8867	58.43

SUEZ WATER PENNSYLVANIA, INC.

ACCOUNT 320.1 WATER TREATMENT PLANT - STRUCTURES AND IMPROVEMENTS

ORIGINAL LIFE TABLE, CONT.

PLACEMENT BAND 1905-2013			EXPERIENCE BAND 1994-2013		
AGE AT BEGIN OF INTERVAL	EXPOSURES AT BEGINNING OF AGE INTERVAL	RETIREMENTS DURING AGE INTERVAL	RETMT RATIO	SURV RATIO	PCT SURV BEGIN OF INTERVAL
39.5	396,427		0.0000	1.0000	51.81
40.5	379,209		0.0000	1.0000	51.81
41.5	378,169		0.0000	1.0000	51.81
42.5	321,457		0.0000	1.0000	51.81
43.5	336,528		0.0000	1.0000	51.81
44.5	336,528		0.0000	1.0000	51.81
45.5	334,694		0.0000	1.0000	51.81
46.5	339,419	11,400	0.0336	0.9664	51.81
47.5	328,019		0.0000	1.0000	50.07
48.5	321,504		0.0000	1.0000	50.07
49.5	93,959		0.0000	1.0000	50.07
50.5	93,959		0.0000	1.0000	50.07
51.5	84,643		0.0000	1.0000	50.07
52.5	84,643		0.0000	1.0000	50.07
53.5	78,419		0.0000	1.0000	50.07
54.5	75,663		0.0000	1.0000	50.07
55.5	20,915		0.0000	1.0000	50.07
56.5	20,914		0.0000	1.0000	50.07
57.5	20,914		0.0000	1.0000	50.07
58.5	20,090		0.0000	1.0000	50.07
59.5	19,886		0.0000	1.0000	50.07
60.5	26,885		0.0000	1.0000	50.07
61.5	26,885		0.0000	1.0000	50.07
62.5	27,015		0.0000	1.0000	50.07
63.5	12,012		0.0000	1.0000	50.07
64.5	46,842		0.0000	1.0000	50.07
65.5	46,898		0.0000	1.0000	50.07
66.5	42,173		0.0000	1.0000	50.07
67.5	42,173	17,412	0.4129	0.5871	50.07
68.5	24,761		0.0000	1.0000	29.40
69.5	24,761		0.0000	1.0000	29.40
70.5	24,761		0.0000	1.0000	29.40
71.5	32,086		0.0000	1.0000	29.40
72.5	32,586		0.0000	1.0000	29.40
73.5	32,586		0.0000	1.0000	29.40
74.5	32,586		0.0000	1.0000	29.40
75.5	32,586		0.0000	1.0000	29.40
76.5	32,794		0.0000	1.0000	29.40
77.5	32,794	203	0.0062	0.9938	29.40
78.5	32,591		0.0000	1.0000	29.22

SUEZ WATER PENNSYLVANIA, INC.

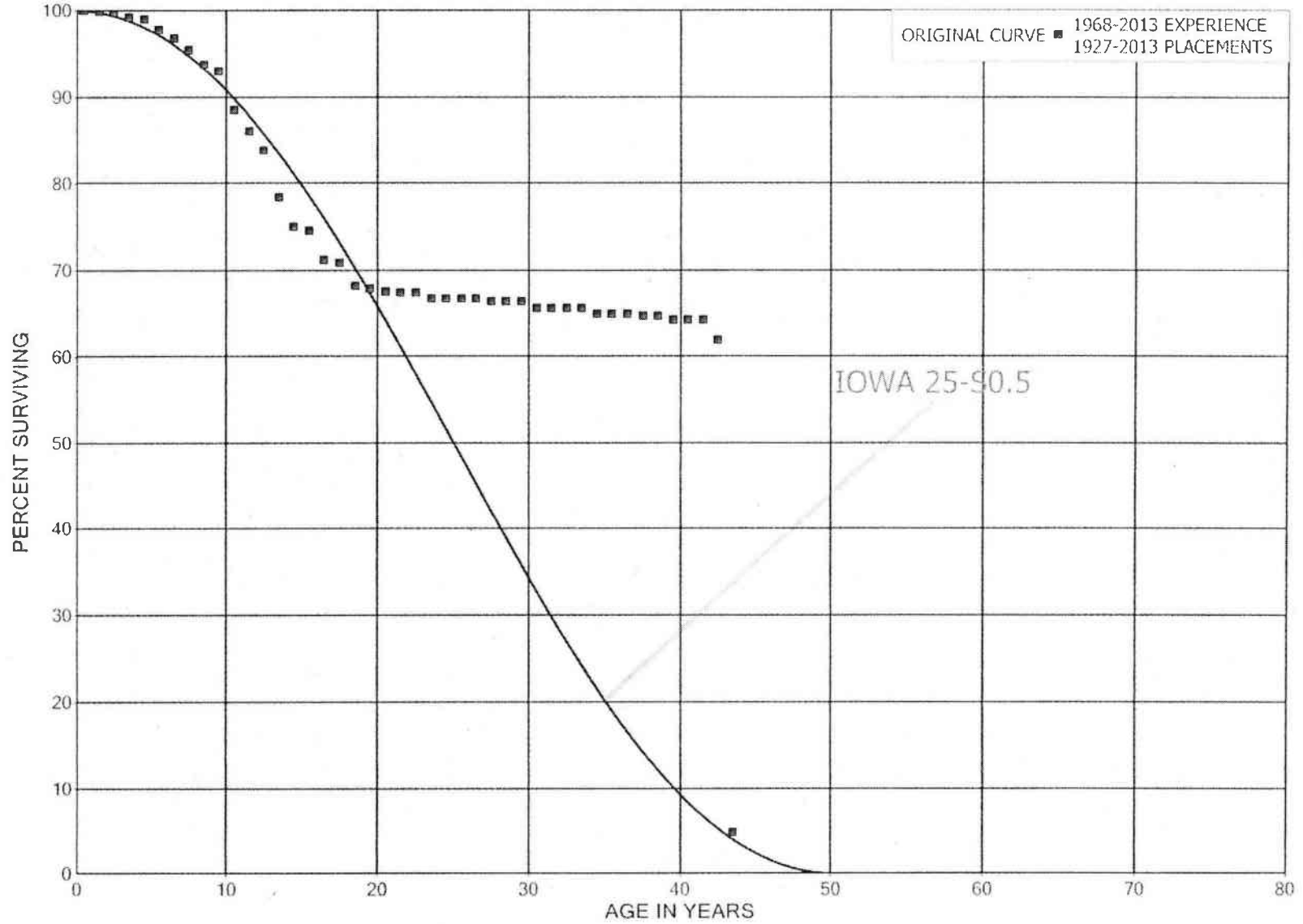
ACCOUNT 320.1 WATER TREATMENT PLANT - STRUCTURES AND IMPROVEMENTS

ORIGINAL LIFE TABLE, CONT.

PLACEMENT BAND 1905-2013			EXPERIENCE BAND 1994-2013		
AGE AT BEGIN OF INTERVAL	EXPOSURES AT BEGINNING OF AGE INTERVAL	RETIREMENTS DURING AGE INTERVAL	RETMT RATIO	SURV RATIO	PCT SURV BEGIN OF INTERVAL
79.5	32,589		0.0000	1.0000	29.22
80.5	25,755		0.0000	1.0000	29.22
81.5	52,293		0.0000	1.0000	29.22
82.5	52,112		0.0000	1.0000	29.22
83.5	52,045		0.0000	1.0000	29.22
84.5	44,574		0.0000	1.0000	29.22
85.5	49,777	300	0.0060	0.9940	29.22
86.5	49,477	11,072	0.2238	0.7762	29.04
87.5	38,405		0.0000	1.0000	22.54
88.5	242,527		0.0000	1.0000	22.54
89.5	242,527		0.0000	1.0000	22.54
90.5	242,527		0.0000	1.0000	22.54
91.5	235,202		0.0000	1.0000	22.54
92.5	234,702	204,122	0.8697	0.1303	22.54
93.5	30,580		0.0000	1.0000	2.94
94.5	30,580		0.0000	1.0000	2.94
95.5	30,580		0.0000	1.0000	2.94
96.5	30,372		0.0000	1.0000	2.94
97.5	30,372		0.0000	1.0000	2.94
98.5	30,372		0.0000	1.0000	2.94
99.5	30,372	24	0.0008	0.9992	2.94
100.5	30,348		0.0000	1.0000	2.93
101.5	14,906		0.0000	1.0000	2.93
102.5	14,906		0.0000	1.0000	2.93
103.5	14,906	8	0.0005	0.9995	2.93
104.5	4,951		0.0000	1.0000	2.93
105.5					2.93



SUEZ WATER PENNSYLVANIA, INC.
ACCOUNT 320.3 WATER TREATMENT PLANT - CHEMICAL EQUIPMENT
ORIGINAL AND SMOOTH SURVIVOR CURVES



SUEZ WATER PENNSYLVANIA, INC.

ACCOUNT 320.3 WATER TREATMENT PLANT - CHEMICAL EQUIPMENT

ORIGINAL LIFE TABLE

PLACEMENT BAND 1927-2013

EXPERIENCE BAND 1968-2013

AGE AT BEGIN OF INTERVAL	EXPOSURES AT BEGINNING OF AGE INTERVAL	RETIREMENTS DURING AGE INTERVAL	RETMT RATIO	SURV RATIO	PCT SURV BEGIN OF INTERVAL
0.0	5,491,714		0.0000	1.0000	100.00
0.5	5,478,272	11,089	0.0020	0.9980	100.00
1.5	5,403,142	5,835	0.0011	0.9989	99.80
2.5	5,190,134	29,598	0.0057	0.9943	99.69
3.5	4,601,444	8,966	0.0019	0.9981	99.12
4.5	4,263,051	52,732	0.0124	0.9876	98.93
5.5	4,121,278	41,564	0.0101	0.9899	97.70
6.5	3,946,990	55,447	0.0140	0.9860	96.72
7.5	1,857,963	31,523	0.0170	0.9830	95.36
8.5	1,114,921	8,745	0.0078	0.9922	93.74
9.5	1,006,782	48,957	0.0486	0.9514	93.01
10.5	938,360	25,488	0.0272	0.9728	88.48
11.5	826,450	21,120	0.0256	0.9744	86.08
12.5	718,537	47,328	0.0659	0.9341	83.88
13.5	687,377	29,597	0.0431	0.9569	78.36
14.5	656,984	4,293	0.0065	0.9935	74.98
15.5	644,358	28,484	0.0442	0.9558	74.49
16.5	486,055	2,370	0.0049	0.9951	71.20
17.5	457,534	17,068	0.0373	0.9627	70.85
18.5	332,668	1,995	0.0060	0.9940	68.21
19.5	311,603	1,257	0.0040	0.9960	67.80
20.5	307,657	673	0.0022	0.9978	67.53
21.5	306,984		0.0000	1.0000	67.38
22.5	302,523	3,000	0.0099	0.9901	67.38
23.5	262,871	1	0.0000	1.0000	66.71
24.5	247,393	144	0.0006	0.9994	66.71
25.5	238,659		0.0000	1.0000	66.67
26.5	204,052	844	0.0041	0.9959	66.67
27.5	179,797		0.0000	1.0000	66.40
28.5	155,052		0.0000	1.0000	66.40
29.5	146,443	1,614	0.0110	0.9890	66.40
30.5	140,512		0.0000	1.0000	65.66
31.5	103,254		0.0000	1.0000	65.66
32.5	102,140		0.0000	1.0000	65.66
33.5	41,355	420	0.0102	0.9898	65.66
34.5	37,351		0.0000	1.0000	65.00
35.5	36,041		0.0000	1.0000	65.00
36.5	116,100	427	0.0037	0.9963	65.00
37.5	107,486		0.0000	1.0000	64.76
38.5	100,941	759	0.0075	0.9925	64.76

SUEZ WATER PENNSYLVANIA, INC.

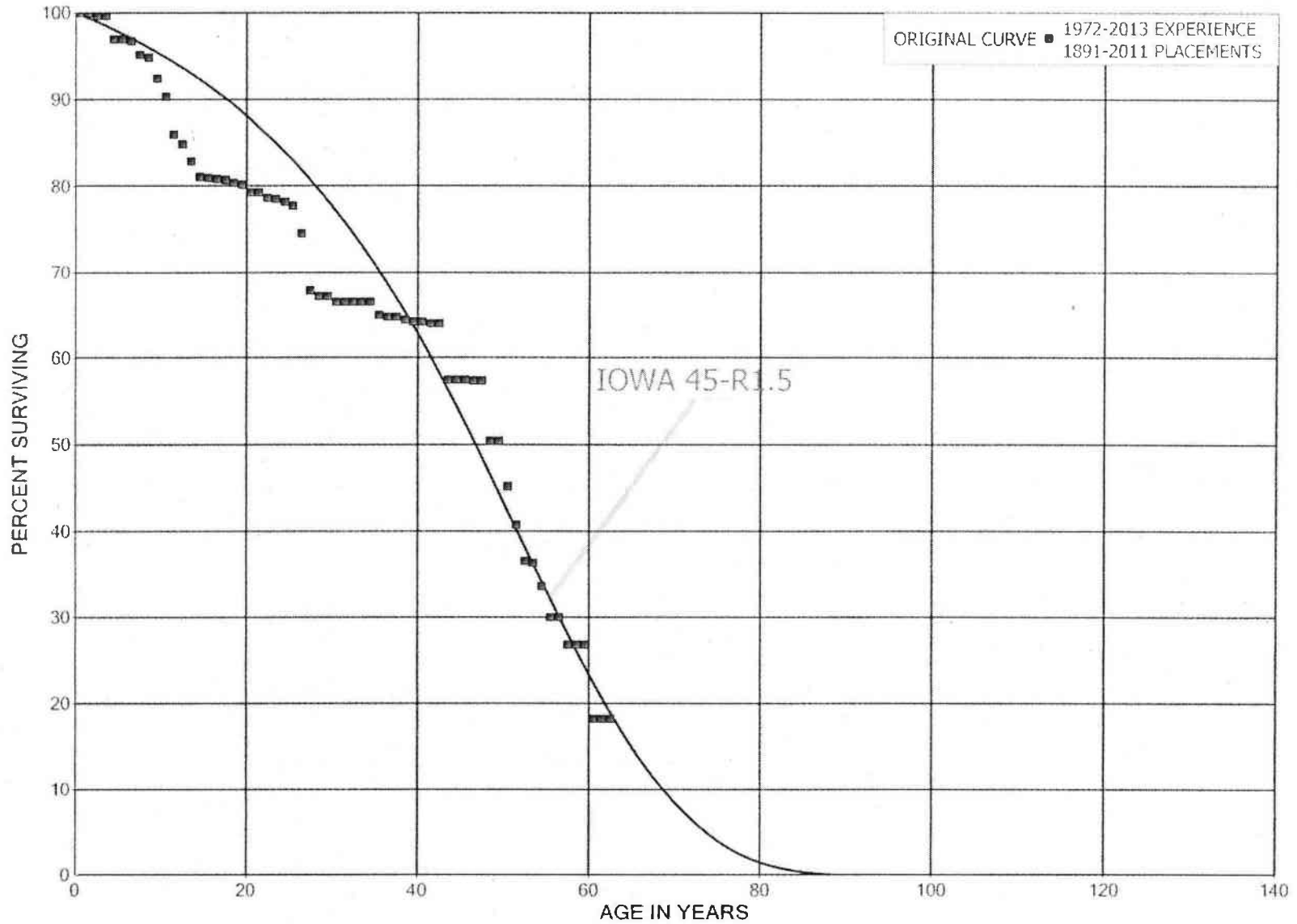
ACCOUNT 320.3 WATER TREATMENT PLANT - CHEMICAL EQUIPMENT

ORIGINAL LIFE TABLE, CONT.

PLACEMENT BAND 1927-2013			EXPERIENCE BAND 1968-2013		
AGE AT BEGIN OF INTERVAL	EXPOSURES AT BEGINNING OF AGE INTERVAL	RETIREMENTS DURING AGE INTERVAL	RETMT RATIO	SURV RATIO	PCT SURV BEGIN OF INTERVAL
39.5	89,840		0.0000	1.0000	64.27
40.5	92,145		0.0000	1.0000	64.27
41.5	90,500	3,351	0.0370	0.9630	64.27
42.5	86,566	79,764	0.9214	0.0786	61.89
43.5	6,802		0.0000	1.0000	4.86
44.5	6,802		0.0000	1.0000	4.86
45.5	6,096		0.0000	1.0000	4.86
46.5	4,608	2,566	0.5570	0.4430	4.86
47.5	2,041		0.0000	1.0000	2.15
48.5	2,041		0.0000	1.0000	2.15
49.5	1,311		0.0000	1.0000	2.15
50.5	589		0.0000	1.0000	2.15
51.5	589		0.0000	1.0000	2.15
52.5	589		0.0000	1.0000	2.15
53.5	589		0.0000	1.0000	2.15
54.5	589		0.0000	1.0000	2.15
55.5	470		0.0000	1.0000	2.15
56.5	470		0.0000	1.0000	2.15
57.5	470		0.0000	1.0000	2.15
58.5	447		0.0000	1.0000	2.15
59.5	157		0.0000	1.0000	2.15
60.5	157		0.0000	1.0000	2.15
61.5	157		0.0000	1.0000	2.15
62.5	100		0.0000	1.0000	2.15
63.5	100		0.0000	1.0000	2.15
64.5	100		0.0000	1.0000	2.15
65.5	100		0.0000	1.0000	2.15
66.5	100		0.0000	1.0000	2.15
67.5	100		0.0000	1.0000	2.15
68.5	100		0.0000	1.0000	2.15
69.5	100		0.0000	1.0000	2.15
70.5	100		0.0000	1.0000	2.15
71.5	100		0.0000	1.0000	2.15
72.5	100		0.0000	1.0000	2.15
73.5	100		0.0000	1.0000	2.15
74.5					2.15



SUEZ WATER PENNSYLVANIA, INC.
ACCOUNT 330 DISTRIBUTION RESERVOIRS AND STANDPIPES
ORIGINAL AND SMOOTH SURVIVOR CURVES



SUEZ WATER PENNSYLVANIA, INC.

ACCOUNT 330 DISTRIBUTION RESERVOIRS AND STANDPIPES

ORIGINAL LIFE TABLE

PLACEMENT BAND 1891-2011

EXPERIENCE BAND 1972-2013

AGE AT BEGIN OF INTERVAL	EXPOSURES AT BEGINNING OF AGE INTERVAL	RETIREMENTS DURING AGE INTERVAL	RETMT RATIO	SURV RATIO	PCT SURV BEGIN OF INTERVAL
0.0	10,245,721		0.0000	1.0000	100.00
0.5	10,245,721	1,510	0.0001	0.9999	100.00
1.5	10,247,327	33,881	0.0033	0.9967	99.99
2.5	10,207,378		0.0000	1.0000	99.65
3.5	7,212,336	197,851	0.0274	0.9726	99.65
4.5	5,217,116		0.0000	1.0000	96.92
5.5	5,178,633	9,814	0.0019	0.9981	96.92
6.5	5,151,031	82,138	0.0159	0.9841	96.74
7.5	4,961,858	19,618	0.0040	0.9960	95.19
8.5	5,102,274	128,045	0.0251	0.9749	94.82
9.5	4,551,021	106,412	0.0234	0.9766	92.44
10.5	4,521,949	219,160	0.0485	0.9515	90.28
11.5	4,165,574	51,000	0.0122	0.9878	85.90
12.5	4,081,206	96,480	0.0236	0.9764	84.85
13.5	3,744,792	80,428	0.0215	0.9785	82.84
14.5	3,664,534	2,872	0.0008	0.9992	81.07
15.5	3,521,091	7,633	0.0022	0.9978	81.00
16.5	3,459,211	2,594	0.0007	0.9993	80.83
17.5	3,421,706	15,604	0.0046	0.9954	80.77
18.5	3,279,303	11,298	0.0034	0.9966	80.40
19.5	3,074,308	33,458	0.0109	0.9891	80.12
20.5	2,985,711		0.0000	1.0000	79.25
21.5	2,876,453	22,900	0.0080	0.9920	79.25
22.5	2,441,188	4,242	0.0017	0.9983	78.62
23.5	1,995,108	7,355	0.0037	0.9963	78.48
24.5	1,895,049	10,212	0.0054	0.9946	78.19
25.5	1,643,027	69,812	0.0425	0.9575	77.77
26.5	1,554,452	138,840	0.0893	0.9107	74.47
27.5	1,277,452	12,634	0.0099	0.9901	67.81
28.5	1,027,594		0.0000	1.0000	67.14
29.5	889,168	8,324	0.0094	0.9906	67.14
30.5	863,694	400	0.0005	0.9995	66.52
31.5	767,156	26	0.0000	1.0000	66.48
32.5	767,130	308	0.0004	0.9996	66.48
33.5	712,867		0.0000	1.0000	66.46
34.5	726,179	15,984	0.0220	0.9780	66.46
35.5	732,504	2,636	0.0036	0.9964	64.99
36.5	729,248		0.0000	1.0000	64.76
37.5	675,018	3,575	0.0053	0.9947	64.76
38.5	667,386	2,044	0.0031	0.9969	64.42

SUEZ WATER PENNSYLVANIA, INC.

ACCOUNT 330 DISTRIBUTION RESERVOIRS AND STANDPIPES

ORIGINAL LIFE TABLE, CONT.

PLACEMENT BAND 1891-2011

EXPERIENCE BAND 1972-2013

AGE AT BEGIN OF INTERVAL	EXPOSURES AT BEGINNING OF AGE INTERVAL	RETIREMENTS DURING AGE INTERVAL	RETMT RATIO	SURV RATIO	PCT SURV BEGIN OF INTERVAL
39.5	646,226		0.0000	1.0000	64.22
40.5	573,588	2,643	0.0046	0.9954	64.22
41.5	566,287		0.0000	1.0000	63.92
42.5	566,287	56,746	0.1002	0.8998	63.92
43.5	507,726		0.0000	1.0000	57.52
44.5	499,358		0.0000	1.0000	57.52
45.5	443,144	609	0.0014	0.9986	57.52
46.5	420,681		0.0000	1.0000	57.44
47.5	420,681	51,744	0.1230	0.8770	57.44
48.5	415,031		0.0000	1.0000	50.37
49.5	415,290	42,857	0.1032	0.8968	50.37
50.5	323,239	31,577	0.0977	0.9023	45.17
51.5	289,823	30,006	0.1035	0.8965	40.76
52.5	216,960	1,433	0.0066	0.9934	36.54
53.5	212,866	16,160	0.0759	0.9241	36.30
54.5	196,705	20,797	0.1057	0.8943	33.54
55.5	175,908		0.0000	1.0000	30.00
56.5	175,766	19,068	0.1085	0.8915	30.00
57.5	156,698		0.0000	1.0000	26.74
58.5	107,906		0.0000	1.0000	26.74
59.5	107,906	34,787	0.3224	0.6776	26.74
60.5	73,119		0.0000	1.0000	18.12
61.5	71,516		0.0000	1.0000	18.12
62.5	124,111	493	0.0040	0.9960	18.12
63.5	123,617	584	0.0047	0.9953	18.05
64.5	123,033		0.0000	1.0000	17.96
65.5	123,033		0.0000	1.0000	17.96
66.5	123,033		0.0000	1.0000	17.96
67.5	123,033		0.0000	1.0000	17.96
68.5	123,033		0.0000	1.0000	17.96
69.5	123,033		0.0000	1.0000	17.96
70.5	122,339	259	0.0021	0.9979	17.96
71.5	124,775		0.0000	1.0000	17.93
72.5	117,641		0.0000	1.0000	17.93
73.5	117,641	12,580	0.1069	0.8931	17.93
74.5	105,060	391	0.0037	0.9963	16.01
75.5	104,669		0.0000	1.0000	15.95
76.5	104,669		0.0000	1.0000	15.95
77.5	134,137		0.0000	1.0000	15.95
78.5	134,137		0.0000	1.0000	15.95

SUEZ WATER PENNSYLVANIA, INC.

ACCOUNT 330 DISTRIBUTION RESERVOIRS AND STANDPIPES

ORIGINAL LIFE TABLE, CONT.

PLACEMENT BAND 1891-2011			EXPERIENCE BAND 1972-2013		
AGE AT BEGIN OF INTERVAL	EXPOSURES AT BEGINNING OF AGE INTERVAL	RETIREMENTS DURING AGE INTERVAL	RETMT RATIO	SURV RATIO	PCT SURV BEGIN OF INTERVAL
79.5	134,137		0.0000	1.0000	15.95
80.5	134,987	4,237	0.0314	0.9686	15.95
81.5	130,750		0.0000	1.0000	15.45
82.5	129,431		0.0000	1.0000	15.45
83.5	129,431	33,422	0.2582	0.7418	15.45
84.5	96,009		0.0000	1.0000	11.46
85.5	94,709		0.0000	1.0000	11.46
86.5	94,709		0.0000	1.0000	11.46
87.5	94,585		0.0000	1.0000	11.46
88.5	93,305		0.0000	1.0000	11.46
89.5	93,305	800	0.0086	0.9914	11.46
90.5	92,505		0.0000	1.0000	11.36
91.5	92,505		0.0000	1.0000	11.36
92.5	92,505		0.0000	1.0000	11.36
93.5	92,505		0.0000	1.0000	11.36
94.5	92,505		0.0000	1.0000	11.36
95.5	92,505		0.0000	1.0000	11.36
96.5	92,505		0.0000	1.0000	11.36
97.5	92,505	10	0.0001	0.9999	11.36
98.5	92,495		0.0000	1.0000	11.36
99.5	92,495		0.0000	1.0000	11.36
100.5	92,495		0.0000	1.0000	11.36
101.5	92,495	49,864	0.5391	0.4609	11.36
102.5	42,631		0.0000	1.0000	5.24
103.5	42,631		0.0000	1.0000	5.24
104.5	42,631		0.0000	1.0000	5.24
105.5	42,631		0.0000	1.0000	5.24
106.5	42,631		0.0000	1.0000	5.24
107.5	42,631		0.0000	1.0000	5.24
108.5	42,631		0.0000	1.0000	5.24
109.5	42,631		0.0000	1.0000	5.24
110.5	42,631		0.0000	1.0000	5.24
111.5	42,631		0.0000	1.0000	5.24
112.5	42,631		0.0000	1.0000	5.24
113.5	40,323		0.0000	1.0000	5.24
114.5	40,323		0.0000	1.0000	5.24
115.5	40,323		0.0000	1.0000	5.24
116.5	40,323	39,418	0.9775	0.0225	5.24
117.5	906		0.0000	1.0000	0.12
118.5	906		0.0000	1.0000	0.12

SUEZ WATER PENNSYLVANIA, INC.

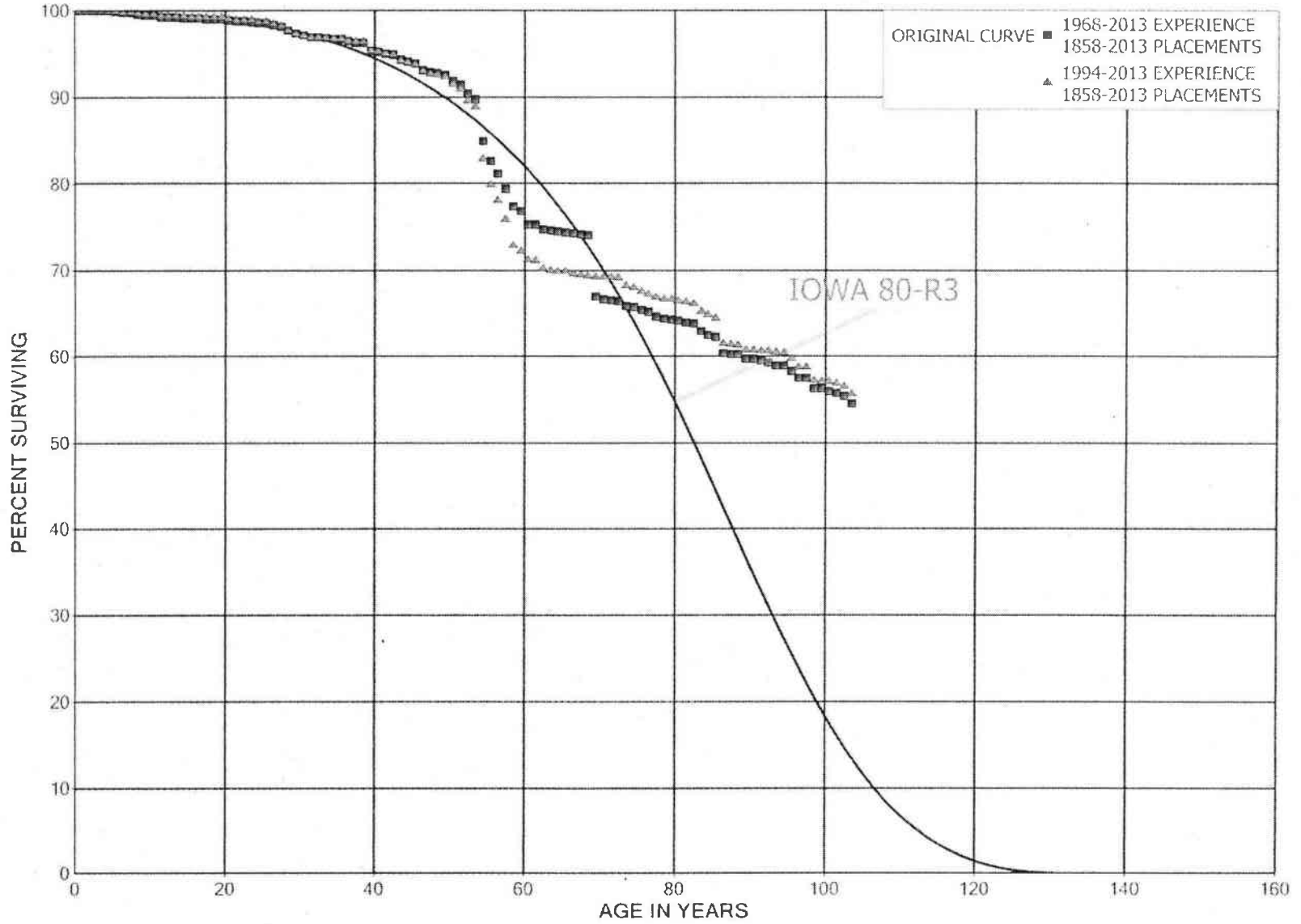
ACCOUNT 330 DISTRIBUTION RESERVOIRS AND STANDPIPES

ORIGINAL LIFE TABLE, CONT.

PLACEMENT BAND 1891-2011			EXPERIENCE BAND 1972-2013		
AGE AT BEGIN OF INTERVAL	EXPOSURES AT BEGINNING OF AGE INTERVAL	RETIREMENTS DURING AGE INTERVAL	RETMT RATIO	SURV RATIO	PCT SURV BEGIN OF INTERVAL
119.5	906		0.0000	1.0000	0.12
120.5	906		0.0000	1.0000	0.12
121.5	906		0.0000	1.0000	0.12
122.5					0.12



SUEZ WATER PENNSYLVANIA, INC.
ACCOUNT 331 TRANSMISSION AND DISTRIBUTION MAINS
ORIGINAL AND SMOOTH SURVIVOR CURVES



SUEZ WATER PENNSYLVANIA, INC.

ACCOUNT 331 TRANSMISSION AND DISTRIBUTION MAINS

ORIGINAL LIFE TABLE

PLACEMENT BAND 1858-2013

EXPERIENCE BAND 1968-2013

AGE AT BEGIN OF INTERVAL	EXPOSURES AT BEGINNING OF AGE INTERVAL	RETIREMENTS DURING AGE INTERVAL	RETMT RATIO	SURV RATIO	PCT SURV BEGIN OF INTERVAL
0.0	101,195,558	8,447	0.0001	0.9999	100.00
0.5	98,600,115	6,776	0.0001	0.9999	99.99
1.5	92,857,536	54,218	0.0006	0.9994	99.98
2.5	87,028,061	19,653	0.0002	0.9998	99.93
3.5	81,711,544	8,657	0.0001	0.9999	99.90
4.5	77,576,292	46,530	0.0006	0.9994	99.89
5.5	71,647,972	72,272	0.0010	0.9990	99.83
6.5	67,365,607	32,145	0.0005	0.9995	99.73
7.5	63,137,296	144,082	0.0023	0.9977	99.69
8.5	59,389,364	25,767	0.0004	0.9996	99.46
9.5	56,868,896	22,687	0.0004	0.9996	99.41
10.5	52,807,249	106,889	0.0020	0.9980	99.37
11.5	50,861,102	9,400	0.0002	0.9998	99.17
12.5	47,535,744	2,658	0.0001	0.9999	99.16
13.5	43,529,223	15,713	0.0004	0.9996	99.15
14.5	40,820,595	4,352	0.0001	0.9999	99.11
15.5	37,776,803	20,781	0.0006	0.9994	99.10
16.5	36,024,459	34,615	0.0010	0.9990	99.05
17.5	34,749,043	6,562	0.0002	0.9998	98.95
18.5	33,033,760	1,404	0.0000	1.0000	98.93
19.5	30,662,340	40,843	0.0013	0.9987	98.93
20.5	28,991,124	33,385	0.0012	0.9988	98.80
21.5	28,012,996	814	0.0000	1.0000	98.69
22.5	25,790,251	11,180	0.0004	0.9996	98.68
23.5	23,664,442	38,254	0.0016	0.9984	98.64
24.5	21,403,657	2,558	0.0001	0.9999	98.48
25.5	19,335,607	32,342	0.0017	0.9983	98.47
26.5	16,351,856	32,901	0.0020	0.9980	98.30
27.5	15,665,744	81,352	0.0052	0.9948	98.11
28.5	13,874,094	45,102	0.0033	0.9967	97.60
29.5	12,979,414	32,366	0.0025	0.9975	97.28
30.5	12,501,184	22,523	0.0018	0.9982	97.04
31.5	11,845,112	8,237	0.0007	0.9993	96.86
32.5	11,403,180	7,632	0.0007	0.9993	96.79
33.5	10,786,080	9,123	0.0008	0.9992	96.73
34.5	10,292,018	6,013	0.0006	0.9994	96.65
35.5	9,103,178	13,517	0.0015	0.9985	96.59
36.5	8,500,450	19,577	0.0023	0.9977	96.45
37.5	8,144,219	6,137	0.0008	0.9992	96.23
38.5	7,503,858	67,442	0.0090	0.9910	96.15

SUEZ WATER PENNSYLVANIA, INC.

ACCOUNT 331 TRANSMISSION AND DISTRIBUTION MAINS

ORIGINAL LIFE TABLE, CONT.

PLACEMENT BAND 1858-2013

EXPERIENCE BAND 1968-2013

AGE AT BEGIN OF INTERVAL	EXPOSURES AT BEGINNING OF AGE INTERVAL	RETIREMENTS DURING AGE INTERVAL	RETMT RATIO	SURV RATIO	PCT SURV BEGIN OF INTERVAL
39.5	6,995,218	9,132	0.0013	0.9987	95.29
40.5	6,265,999	17,894	0.0029	0.9971	95.16
41.5	5,871,456	3,376	0.0006	0.9994	94.89
42.5	5,583,554	31,417	0.0056	0.9944	94.84
43.5	5,028,341	11,066	0.0022	0.9978	94.30
44.5	4,664,567	14,864	0.0032	0.9968	94.10
45.5	4,453,672	32,254	0.0072	0.9928	93.80
46.5	4,195,019	10,403	0.0025	0.9975	93.12
47.5	3,929,015	6,738	0.0017	0.9983	92.89
48.5	3,782,829	8,280	0.0022	0.9978	92.73
49.5	3,233,999	24,872	0.0077	0.9923	92.52
50.5	2,914,630	14,563	0.0050	0.9950	91.81
51.5	2,727,248	28,395	0.0104	0.9896	91.35
52.5	2,506,995	19,991	0.0080	0.9920	90.40
53.5	2,217,413	117,646	0.0531	0.9469	89.68
54.5	1,866,997	50,056	0.0268	0.9732	84.92
55.5	1,732,219	30,655	0.0177	0.9823	82.65
56.5	1,519,783	32,503	0.0214	0.9786	81.18
57.5	1,373,750	36,230	0.0264	0.9736	79.45
58.5	1,354,770	9,523	0.0070	0.9930	77.35
59.5	1,413,356	27,549	0.0195	0.9805	76.81
60.5	1,342,082	1,462	0.0011	0.9989	75.31
61.5	1,268,904	7,818	0.0062	0.9938	75.23
62.5	1,222,826	2,228	0.0018	0.9982	74.77
63.5	1,191,675	1,251	0.0011	0.9989	74.63
64.5	1,176,228	1,902	0.0016	0.9984	74.55
65.5	1,109,034	2,844	0.0026	0.9974	74.43
66.5	1,095,927	474	0.0004	0.9996	74.24
67.5	1,156,727	2,105	0.0018	0.9982	74.21
68.5	1,151,639	110,700	0.0961	0.9039	74.07
69.5	1,034,073	5,128	0.0050	0.9950	66.95
70.5	1,028,390	1,156	0.0011	0.9989	66.62
71.5	1,015,800	2,129	0.0021	0.9979	66.55
72.5	1,016,579	8,233	0.0081	0.9919	66.41
73.5	743,688	1,982	0.0027	0.9973	65.87
74.5	717,096	3,350	0.0047	0.9953	65.69
75.5	700,068	2,057	0.0029	0.9971	65.39
76.5	679,976	6,353	0.0093	0.9907	65.19
77.5	691,256	2,069	0.0030	0.9970	64.59
78.5	698,819	641	0.0009	0.9991	64.39

SUEZ WATER PENNSYLVANIA, INC.

ACCOUNT 331 TRANSMISSION AND DISTRIBUTION MAINS

ORIGINAL LIFE TABLE, CONT.

PLACEMENT BAND 1858-2013

EXPERIENCE BAND 1968-2013

AGE AT BEGIN OF INTERVAL	EXPOSURES AT BEGINNING OF AGE INTERVAL	RETIREMENTS DURING AGE INTERVAL	RETMT RATIO	SURV RATIO	PCT SURV BEGIN OF INTERVAL
79.5	693,227	1,807	0.0026	0.9974	64.33
80.5	689,815	2,063	0.0030	0.9970	64.17
81.5	650,028	1,090	0.0017	0.9983	63.97
82.5	640,561	8,933	0.0139	0.9861	63.87
83.5	621,509	4,215	0.0068	0.9932	62.98
84.5	535,408	1,899	0.0035	0.9965	62.55
85.5	516,450	15,865	0.0307	0.9693	62.33
86.5	461,200	642	0.0014	0.9986	60.41
87.5	468,427	404	0.0009	0.9991	60.33
88.5	409,972	3,512	0.0086	0.9914	60.28
89.5	388,820	422	0.0011	0.9989	59.76
90.5	387,351	1,110	0.0029	0.9971	59.69
91.5	384,438	1,327	0.0035	0.9965	59.52
92.5	381,500	2,473	0.0065	0.9935	59.32
93.5	371,242	225	0.0006	0.9994	58.93
94.5	369,194	3,508	0.0095	0.9905	58.90
95.5	365,587	4,912	0.0134	0.9866	58.34
96.5	360,061	102	0.0003	0.9997	57.55
97.5	358,719	7,590	0.0212	0.9788	57.54
98.5	348,482	249	0.0007	0.9993	56.32
99.5	324,521	2,163	0.0067	0.9933	56.28
100.5	321,650	1,033	0.0032	0.9968	55.91
101.5	300,869	1,497	0.0050	0.9950	55.73
102.5	298,964	5,184	0.0173	0.9827	55.45
103.5	289,953	3,106	0.0107	0.9893	54.49
104.5	239,446	79	0.0003	0.9997	53.90
105.5	174,382	1,672	0.0096	0.9904	53.89
106.5	172,701	823	0.0048	0.9952	53.37
107.5	169,455	2,272	0.0134	0.9866	53.11
108.5	166,648	41	0.0002	0.9998	52.40
109.5	167,778	1,720	0.0102	0.9898	52.39
110.5	165,944	1,460	0.0088	0.9912	51.85
111.5	164,274	2,664	0.0162	0.9838	51.40
112.5	146,168	840	0.0057	0.9943	50.56
113.5	81,042	2,559	0.0316	0.9684	50.27
114.5	76,372	4,743	0.0621	0.9379	48.69
115.5	70,892	8,289	0.1169	0.8831	45.66
116.5	61,495	4,653	0.0757	0.9243	40.32
117.5	54,569	6,672	0.1223	0.8777	37.27
118.5	42,445	1,647	0.0388	0.9612	32.71

SUEZ WATER PENNSYLVANIA, INC.

ACCOUNT 331 TRANSMISSION AND DISTRIBUTION MAINS

ORIGINAL LIFE TABLE, CONT.

PLACEMENT BAND 1858-2013

EXPERIENCE BAND 1968-2013

AGE AT BEGIN OF INTERVAL	EXPOSURES AT BEGINNING OF AGE INTERVAL	RETIREMENTS DURING AGE INTERVAL	RETMT RATIO	SURV RATIO	PCT SURV BEGIN OF INTERVAL
119.5	38,493	3,276	0.0851	0.9149	31.45
120.5	32,063	6,828	0.2130	0.7870	28.77
121.5	23,907	6,047	0.2529	0.7471	22.64
122.5	17,441	3,549	0.2035	0.7965	16.92
123.5	12,364	530	0.0428	0.9572	13.47
124.5	8,579	2,004	0.2336	0.7664	12.90
125.5	6,373	1,098	0.1723	0.8277	9.88
126.5	5,240	1,205	0.2300	0.7700	8.18
127.5	3,960	7	0.0018	0.9982	6.30
128.5	3,952	210	0.0531	0.9469	6.29
129.5	3,742		0.0000	1.0000	5.95
130.5	3,413	137	0.0400	0.9600	5.95
131.5	2,917	908	0.3113	0.6887	5.72
132.5	2,009	110	0.0548	0.9452	3.94
133.5	1,597	212	0.1327	0.8673	3.72
134.5	1,385	11	0.0079	0.9921	3.23
135.5	1,374	38	0.0278	0.9722	3.20
136.5	1,336	90	0.0674	0.9326	3.11
137.5	1,246		0.0000	1.0000	2.90
138.5	1,246		0.0000	1.0000	2.90
139.5	1,245	32	0.0257	0.9743	2.90
140.5	1,213	81	0.0668	0.9332	2.83
141.5	1,132	64	0.0565	0.9435	2.64
142.5	1,068		0.0000	1.0000	2.49
143.5	1,068		0.0000	1.0000	2.49
144.5	1,068		0.0000	1.0000	2.49
145.5	970		0.0000	1.0000	2.49
146.5	770		0.0000	1.0000	2.49
147.5	668		0.0000	1.0000	2.49
148.5	668		0.0000	1.0000	2.49
149.5	668		0.0000	1.0000	2.49
150.5	668		0.0000	1.0000	2.49
151.5	668		0.0000	1.0000	2.49
152.5	668		0.0000	1.0000	2.49
153.5	11		0.0000	1.0000	2.49
154.5					2.49

SUEZ WATER PENNSYLVANIA, INC.

ACCOUNT 331 TRANSMISSION AND DISTRIBUTION MAINS

ORIGINAL LIFE TABLE

PLACEMENT BAND 1858-2013

EXPERIENCE BAND 1994-2013

AGE AT BEGIN OF INTERVAL	EXPOSURES AT BEGINNING OF AGE INTERVAL	RETIREMENTS DURING AGE INTERVAL	RETMT RATIO	SURV RATIO	PCT SURV BEGIN OF INTERVAL
0.0	74,495,826	7,415	0.0001	0.9999	100.00
0.5	73,343,414	360	0.0000	1.0000	99.99
1.5	68,287,101	47,200	0.0007	0.9993	99.99
2.5	64,491,111	8,003	0.0001	0.9999	99.92
3.5	60,726,853	8,556	0.0001	0.9999	99.91
4.5	58,430,802	46,530	0.0008	0.9992	99.89
5.5	54,396,276	69,874	0.0013	0.9987	99.81
6.5	52,896,273		0.0000	1.0000	99.69
7.5	49,281,295	59,757	0.0012	0.9988	99.69
8.5	47,127,552	18,855	0.0004	0.9996	99.57
9.5	45,391,494	4,487	0.0001	0.9999	99.53
10.5	41,657,210	100,898	0.0024	0.9976	99.52
11.5	40,224,076	2,686	0.0001	0.9999	99.27
12.5	37,405,649	459	0.0000	1.0000	99.27
13.5	33,818,859	11,114	0.0003	0.9997	99.27
14.5	31,500,930	2,671	0.0001	0.9999	99.23
15.5	29,553,906	4,305	0.0001	0.9999	99.23
16.5	28,329,727	25,556	0.0009	0.9991	99.21
17.5	27,327,899	192	0.0000	1.0000	99.12
18.5	26,326,800		0.0000	1.0000	99.12
19.5	24,236,535	32,010	0.0013	0.9987	99.12
20.5	23,302,198	32,713	0.0014	0.9986	98.99
21.5	22,696,226	38	0.0000	1.0000	98.85
22.5	20,902,665	10,252	0.0005	0.9995	98.85
23.5	19,300,050	37,528	0.0019	0.9981	98.80
24.5	17,393,350	1,026	0.0001	0.9999	98.61
25.5	15,485,689	28,941	0.0019	0.9981	98.60
26.5	12,705,282	30,179	0.0024	0.9976	98.42
27.5	12,015,423	72,304	0.0060	0.9940	98.19
28.5	10,344,225	41,763	0.0040	0.9960	97.60
29.5	9,981,824	27,649	0.0028	0.9972	97.20
30.5	9,780,165	16,727	0.0017	0.9983	96.93
31.5	9,305,424	1,275	0.0001	0.9999	96.77
32.5	9,054,527	5,677	0.0006	0.9994	96.75
33.5	8,737,647	8,080	0.0009	0.9991	96.69
34.5	8,481,222	1,984	0.0002	0.9998	96.60
35.5	7,361,829	10,176	0.0014	0.9986	96.58
36.5	6,944,493	7,936	0.0011	0.9989	96.45
37.5	6,735,518	3,291	0.0005	0.9995	96.34
38.5	6,155,802	65,811	0.0107	0.9893	96.29

SUEZ WATER PENNSYLVANIA, INC.

ACCOUNT 331 TRANSMISSION AND DISTRIBUTION MAINS

ORIGINAL LIFE TABLE, CONT.

PLACEMENT BAND 1858-2013

EXPERIENCE BAND 1994-2013

AGE AT BEGIN OF INTERVAL	EXPOSURES AT BEGINNING OF AGE INTERVAL	RETIREMENTS DURING AGE INTERVAL	RETMT RATIO	SURV RATIO	PCT SURV BEGIN OF INTERVAL
39.5	5,825,920	6,122	0.0011	0.9989	95.26
40.5	5,155,337	13,516	0.0026	0.9974	95.16
41.5	4,860,924	2,980	0.0006	0.9994	94.91
42.5	4,571,987	31,187	0.0068	0.9932	94.85
43.5	4,060,538	8,961	0.0022	0.9978	94.21
44.5	3,724,842	9,922	0.0027	0.9973	94.00
45.5	3,594,806	31,038	0.0086	0.9914	93.75
46.5	3,372,195	10,130	0.0030	0.9970	92.94
47.5	3,122,776	3,773	0.0012	0.9988	92.66
48.5	2,989,209	7,812	0.0026	0.9974	92.55
49.5	2,449,701	23,239	0.0095	0.9905	92.31
50.5	2,135,615	14,482	0.0068	0.9932	91.43
51.5	1,964,088	27,731	0.0141	0.9859	90.81
52.5	1,761,928	12,927	0.0073	0.9927	89.53
53.5	1,720,128	117,486	0.0683	0.9317	88.87
54.5	1,400,365	49,310	0.0352	0.9648	82.80
55.5	1,264,019	29,028	0.0230	0.9770	79.88
56.5	1,075,891	30,943	0.0288	0.9712	78.05
57.5	932,951	35,980	0.0386	0.9614	75.81
58.5	870,117	8,221	0.0094	0.9906	72.88
59.5	744,622	10,829	0.0145	0.9855	72.19
60.5	693,867	1,189	0.0017	0.9983	71.14
61.5	655,100	7,669	0.0117	0.9883	71.02
62.5	616,481	2,020	0.0033	0.9967	70.19
63.5	596,151	909	0.0015	0.9985	69.96
64.5	663,927	633	0.0010	0.9990	69.85
65.5	618,231	2,844	0.0046	0.9954	69.79
66.5	626,127	474	0.0008	0.9992	69.47
67.5	624,244	1,315	0.0021	0.9979	69.41
68.5	687,718	771	0.0011	0.9989	69.27
69.5	699,122	265	0.0004	0.9996	69.19
70.5	699,097	252	0.0004	0.9996	69.16
71.5	689,922	1,057	0.0015	0.9985	69.14
72.5	680,461	8,073	0.0119	0.9881	69.03
73.5	411,438	1,523	0.0037	0.9963	68.21
74.5	381,939	2,538	0.0066	0.9934	67.96
75.5	363,744	1,771	0.0049	0.9951	67.51
76.5	342,565	1,882	0.0055	0.9945	67.18
77.5	336,434	784	0.0023	0.9977	66.81
78.5	331,790	251	0.0008	0.9992	66.66

SUEZ WATER PENNSYLVANIA, INC.

ACCOUNT 331 TRANSMISSION AND DISTRIBUTION MAINS

ORIGINAL LIFE TABLE, CONT.

PLACEMENT BAND 1858-2013

EXPERIENCE BAND 1994-2013

AGE AT BEGIN OF INTERVAL	EXPOSURES AT BEGINNING OF AGE INTERVAL	RETIREMENTS DURING AGE INTERVAL	RETMT RATIO	SURV RATIO	PCT SURV BEGIN OF INTERVAL
79.5	354,782	1,403	0.0040	0.9960	66.61
80.5	350,608	574	0.0016	0.9984	66.34
81.5	333,662	739	0.0022	0.9978	66.23
82.5	324,646	4,441	0.0137	0.9863	66.09
83.5	314,042	1,831	0.0058	0.9942	65.18
84.5	279,223	1,801	0.0065	0.9935	64.80
85.5	329,540	14,966	0.0454	0.9546	64.38
86.5	275,197	348	0.0013	0.9987	61.46
87.5	272,064	195	0.0007	0.9993	61.38
88.5	215,099	2,262	0.0105	0.9895	61.34
89.5	195,215	74	0.0004	0.9996	60.69
90.5	194,392	295	0.0015	0.9985	60.67
91.5	192,504	38	0.0002	0.9998	60.58
92.5	208,792	281	0.0013	0.9987	60.57
93.5	277,527	169	0.0006	0.9994	60.49
94.5	277,866	3,131	0.0113	0.9887	60.45
95.5	276,510	4,893	0.0177	0.9823	59.77
96.5	272,267	62	0.0002	0.9998	58.71
97.5	273,347	7,180	0.0263	0.9737	58.70
98.5	276,653	182	0.0007	0.9993	57.15
99.5	257,329	375	0.0015	0.9985	57.12
100.5	261,379	718	0.0027	0.9973	57.03
101.5	242,665	1,451	0.0060	0.9940	56.88
102.5	242,793	3,898	0.0161	0.9839	56.54
103.5	253,182	3,106	0.0123	0.9877	55.63
104.5	217,272	35	0.0002	0.9998	54.95
105.5	152,837	1,672	0.0109	0.9891	54.94
106.5	153,397	770	0.0050	0.9950	54.34
107.5	148,586	2,209	0.0149	0.9851	54.06
108.5	145,934	41	0.0003	0.9997	53.26
109.5	145,888	1,720	0.0118	0.9882	53.25
110.5	144,949	1,460	0.0101	0.9899	52.62
111.5	145,449	2,664	0.0183	0.9817	52.09
112.5	127,343	840	0.0066	0.9934	51.13
113.5	76,642	2,559	0.0334	0.9666	50.80
114.5	71,972	4,743	0.0659	0.9341	49.10
115.5	66,492	8,247	0.1240	0.8760	45.86
116.5	57,138	4,653	0.0814	0.9186	40.18
117.5	50,212	6,672	0.1329	0.8671	36.90
118.5	38,088	1,647	0.0432	0.9568	32.00

SUEZ WATER PENNSYLVANIA, INC.

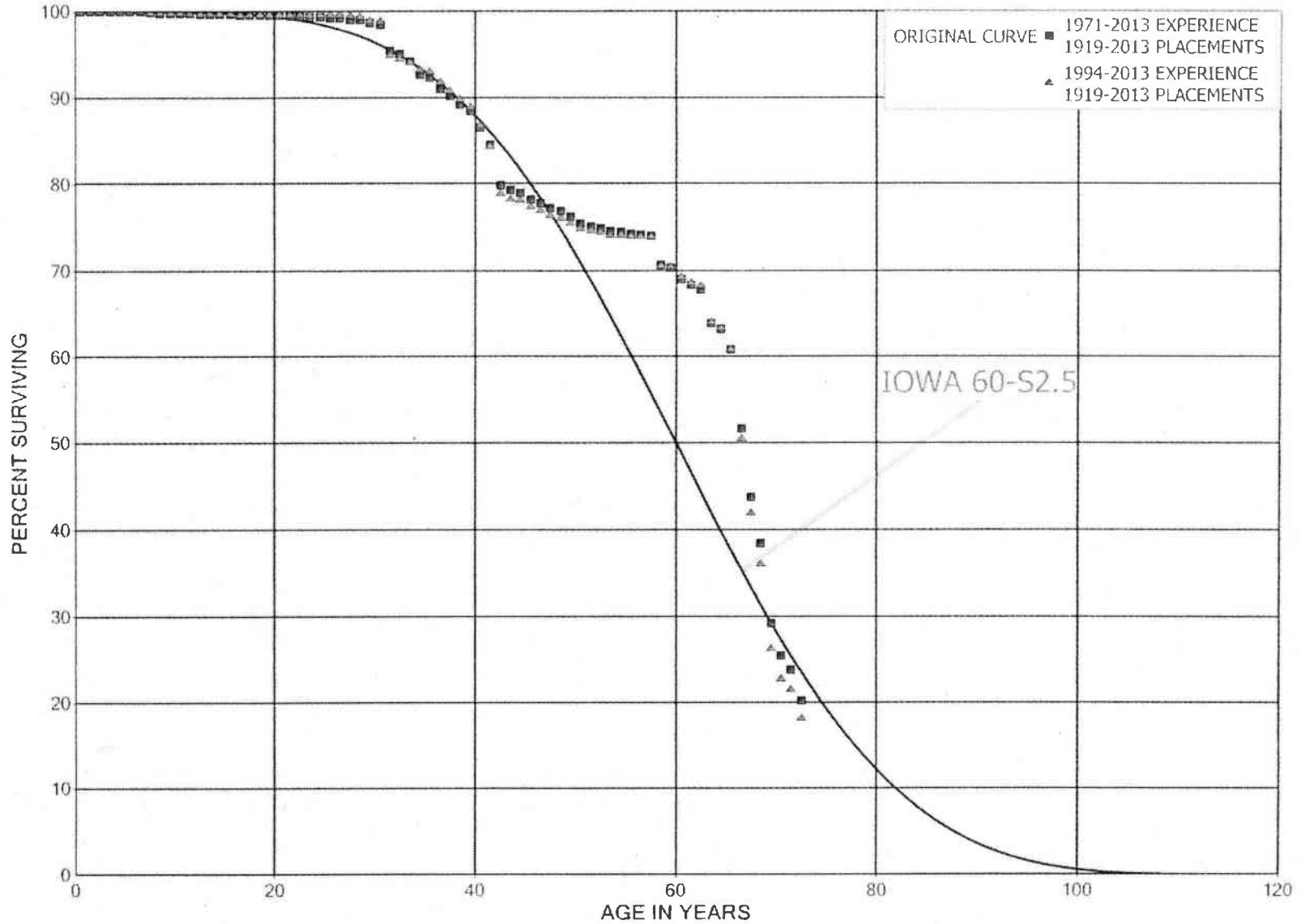
ACCOUNT 331 TRANSMISSION AND DISTRIBUTION MAINS

ORIGINAL LIFE TABLE, CONT.

PLACEMENT BAND 1858-2013			EXPERIENCE BAND 1994-2013			
AGE AT BEGIN OF INTERVAL	EXPOSURES AT BEGINNING OF AGE INTERVAL	RETIREMENTS DURING AGE INTERVAL	RETMT RATIO	SURV RATIO	PCT SURV BEGIN OF INTERVAL	
119.5	34,459	3,276	0.0951	0.9049	30.62	
120.5	28,029	6,828	0.2436	0.7564	27.71	
121.5	19,873	6,047	0.3043	0.6957	20.96	
122.5	13,407	3,549	0.2647	0.7353	14.58	
123.5	8,330	530	0.0636	0.9364	10.72	
124.5	4,545	1,181	0.2598	0.7402	10.04	
125.5	3,504	1,098	0.3133	0.6867	7.43	
126.5	2,680	1,205	0.4496	0.5504	5.10	
127.5	1,730		0.0000	1.0000	2.81	
128.5	1,729		0.0000	1.0000	2.81	
129.5	1,729		0.0000	1.0000	2.81	
130.5	1,401	5	0.0036	0.9964	2.81	
131.5	1,036		0.0000	1.0000	2.80	
132.5	1,036	110	0.1062	0.8938	2.80	
133.5	1,495	212	0.1418	0.8582	2.50	
134.5	1,375	11	0.0080	0.9920	2.15	
135.5	1,374	38	0.0278	0.9722	2.13	
136.5	1,336	90	0.0674	0.9326	2.07	
137.5	1,246		0.0000	1.0000	1.93	
138.5	1,246		0.0000	1.0000	1.93	
139.5	1,245	32	0.0257	0.9743	1.93	
140.5	1,213	81	0.0668	0.9332	1.88	
141.5	1,132	64	0.0565	0.9435	1.76	
142.5	1,068		0.0000	1.0000	1.66	
143.5	1,068		0.0000	1.0000	1.66	
144.5	1,068		0.0000	1.0000	1.66	
145.5	970		0.0000	1.0000	1.66	
146.5	770		0.0000	1.0000	1.66	
147.5	668		0.0000	1.0000	1.66	
148.5	668		0.0000	1.0000	1.66	
149.5	668		0.0000	1.0000	1.66	
150.5	668		0.0000	1.0000	1.66	
151.5	668		0.0000	1.0000	1.66	
152.5	668		0.0000	1.0000	1.66	
153.5	11		0.0000	1.0000	1.66	
154.5					1.66	



SUEZ WATER PENNSYLVANIA, INC.
ACCOUNT 333 SERVICES
ORIGINAL AND SMOOTH SURVIVOR CURVES



SUEZ WATER PENNSYLVANIA, INC.

ACCOUNT 333 SERVICES

ORIGINAL LIFE TABLE

PLACEMENT BAND 1919-2013

EXPERIENCE BAND 1971-2013

AGE AT BEGIN OF INTERVAL	EXPOSURES AT BEGINNING OF AGE INTERVAL	RETIREMENTS DURING AGE INTERVAL	RETMT RATIO	SURV RATIO	PCT SURV BEGIN OF INTERVAL
0.0	28,187,228		0.0000	1.0000	100.00
0.5	27,087,804	19,941	0.0007	0.9993	100.00
1.5	26,014,597		0.0000	1.0000	99.93
2.5	24,463,918	50	0.0000	1.0000	99.93
3.5	22,998,284	976	0.0000	1.0000	99.93
4.5	21,762,651	1,915	0.0001	0.9999	99.92
5.5	19,948,618	807	0.0000	1.0000	99.91
6.5	18,580,443	21,190	0.0011	0.9989	99.91
7.5	17,535,856	9,228	0.0005	0.9995	99.80
8.5	16,818,574	1,072	0.0001	0.9999	99.74
9.5	16,079,292	3,604	0.0002	0.9998	99.74
10.5	15,304,884	5,574	0.0004	0.9996	99.71
11.5	14,488,220	2,543	0.0002	0.9998	99.68
12.5	13,316,929	401	0.0000	1.0000	99.66
13.5	11,927,923	1,488	0.0001	0.9999	99.66
14.5	11,031,007	5,532	0.0005	0.9995	99.64
15.5	10,162,930	4,038	0.0004	0.9996	99.59
16.5	9,666,724	1,751	0.0002	0.9998	99.56
17.5	9,139,173	2,035	0.0002	0.9998	99.54
18.5	8,513,286	2,434	0.0003	0.9997	99.51
19.5	7,844,786	2,535	0.0003	0.9997	99.49
20.5	7,249,665	2,861	0.0004	0.9996	99.45
21.5	6,795,321	3,707	0.0005	0.9995	99.42
22.5	6,264,322	1,984	0.0003	0.9997	99.36
23.5	5,745,323	1,704	0.0003	0.9997	99.33
24.5	5,288,058	5,328	0.0010	0.9990	99.30
25.5	4,688,340	3,525	0.0008	0.9992	99.20
26.5	4,097,532	5,133	0.0013	0.9987	99.13
27.5	3,743,871	4,171	0.0011	0.9989	99.00
28.5	3,369,333	10,976	0.0033	0.9967	98.89
29.5	3,165,197	6,095	0.0019	0.9981	98.57
30.5	3,017,896	90,172	0.0299	0.9701	98.38
31.5	2,781,898	10,744	0.0039	0.9961	95.44
32.5	2,620,625	25,375	0.0097	0.9903	95.07
33.5	2,531,338	40,413	0.0160	0.9840	94.15
34.5	2,268,883	9,196	0.0041	0.9959	92.65
35.5	2,038,219	27,935	0.0137	0.9863	92.27
36.5	1,862,514	17,643	0.0095	0.9905	91.01
37.5	1,734,452	18,747	0.0108	0.9892	90.14
38.5	1,604,055	14,071	0.0088	0.9912	89.17

SUEZ WATER PENNSYLVANIA, INC.

ACCOUNT 333 SERVICES

ORIGINAL LIFE TABLE, CONT.

PLACEMENT BAND 1919-2013			EXPERIENCE BAND 1971-2013		
AGE AT BEGIN OF INTERVAL	EXPOSURES AT BEGINNING OF AGE INTERVAL	RETIREMENTS DURING AGE INTERVAL	RETMT RATIO	SURV RATIO	PCT SURV BEGIN OF INTERVAL
39.5	1,449,991	30,315	0.0209	0.9791	88.39
40.5	1,278,750	30,018	0.0235	0.9765	86.54
41.5	1,153,275	63,319	0.0549	0.9451	84.51
42.5	1,020,337	8,113	0.0080	0.9920	79.87
43.5	971,229	3,270	0.0034	0.9966	79.23
44.5	949,646	9,697	0.0102	0.9898	78.97
45.5	916,453	4,675	0.0051	0.9949	78.16
46.5	871,703	6,174	0.0071	0.9929	77.76
47.5	822,421	3,944	0.0048	0.9952	77.21
48.5	766,475	6,705	0.0087	0.9913	76.84
49.5	701,551	7,426	0.0106	0.9894	76.17
50.5	639,609	2,991	0.0047	0.9953	75.36
51.5	584,386	1,720	0.0029	0.9971	75.01
52.5	531,628	2,243	0.0042	0.9958	74.79
53.5	483,175	742	0.0015	0.9985	74.47
54.5	438,220	1,078	0.0025	0.9975	74.36
55.5	407,721	337	0.0008	0.9992	74.18
56.5	375,217	923	0.0025	0.9975	74.12
57.5	343,080	15,651	0.0456	0.9544	73.93
58.5	283,664	1,211	0.0043	0.9957	70.56
59.5	249,836	4,488	0.0180	0.9820	70.26
60.5	212,756	2,213	0.0104	0.9896	69.00
61.5	177,877	1,354	0.0076	0.9924	68.28
62.5	144,404	8,405	0.0582	0.9418	67.76
63.5	115,995	1,161	0.0100	0.9900	63.82
64.5	95,983	3,638	0.0379	0.9621	63.18
65.5	76,363	11,478	0.1503	0.8497	60.78
66.5	60,456	9,222	0.1525	0.8475	51.65
67.5	49,199	6,039	0.1228	0.8772	43.77
68.5	41,375	9,918	0.2397	0.7603	38.40
69.5	30,424	3,993	0.1312	0.8688	29.19
70.5	26,395	1,695	0.0642	0.9358	25.36
71.5	24,408	3,619	0.1483	0.8517	23.73
72.5	19,096	1,116	0.0584	0.9416	20.21
73.5	10,160	599	0.0589	0.9411	19.03
74.5	9,323	867	0.0929	0.9071	17.91
75.5	8,193	240	0.0293	0.9707	16.25
76.5	7,949	299	0.0376	0.9624	15.77
77.5	6,882	132	0.0192	0.9808	15.18
78.5	5,995	107	0.0178	0.9822	14.89

SUEZ WATER PENNSYLVANIA, INC.

ACCOUNT 333 SERVICES

ORIGINAL LIFE TABLE, CONT.

PLACEMENT BAND 1919-2013

EXPERIENCE BAND 1971-2013

AGE AT BEGIN OF INTERVAL	EXPOSURES AT BEGINNING OF AGE INTERVAL	RETIREMENTS DURING AGE INTERVAL	RETMT RATIO	SURV RATIO	PCT SURV BEGIN OF INTERVAL
79.5	5,757	83	0.0144	0.9856	14.62
80.5	5,579		0.0000	1.0000	14.41
81.5	5,461	334	0.0612	0.9388	14.41
82.5	5,087	216	0.0425	0.9575	13.53
83.5	4,786	290	0.0605	0.9395	12.95
84.5	4,385	103	0.0235	0.9765	12.17
85.5	4,191		0.0000	1.0000	11.88
86.5	4,064		0.0000	1.0000	11.88
87.5	3,208		0.0000	1.0000	11.88
88.5	2,230	20	0.0088	0.9912	11.88
89.5	1,308		0.0000	1.0000	11.78
90.5	985		0.0000	1.0000	11.78
91.5	83		0.0000	1.0000	11.78
92.5	56		0.0000	1.0000	11.78
93.5					11.78

SUEZ WATER PENNSYLVANIA, INC.

ACCOUNT 333 SERVICES

ORIGINAL LIFE TABLE

PLACEMENT BAND 1919-2013

EXPERIENCE BAND 1994-2013

AGE AT BEGIN OF INTERVAL	EXPOSURES AT BEGINNING OF AGE INTERVAL	RETIREMENTS DURING AGE INTERVAL	RETMT RATIO	SURV RATIO	PCT SURV BEGIN OF INTERVAL
0.0	21,464,567		0.0000	1.0000	100.00
0.5	20,911,741	19,941	0.0010	0.9990	100.00
1.5	20,239,884		0.0000	1.0000	99.90
2.5	19,169,204		0.0000	1.0000	99.90
3.5	18,163,828		0.0000	1.0000	99.90
4.5	17,332,180		0.0000	1.0000	99.90
5.5	16,062,649		0.0000	1.0000	99.90
6.5	15,222,808	19,545	0.0013	0.9987	99.90
7.5	14,472,249	8,947	0.0006	0.9994	99.78
8.5	14,072,903		0.0000	1.0000	99.71
9.5	13,473,586	2,777	0.0002	0.9998	99.71
10.5	12,820,707	4,859	0.0004	0.9996	99.69
11.5	12,099,503	1,929	0.0002	0.9998	99.66
12.5	11,050,393		0.0000	1.0000	99.64
13.5	9,751,997	399	0.0000	1.0000	99.64
14.5	9,043,760	4,596	0.0005	0.9995	99.64
15.5	8,350,691	3,286	0.0004	0.9996	99.59
16.5	7,961,248		0.0000	1.0000	99.55
17.5	7,503,024	23	0.0000	1.0000	99.55
18.5	6,943,298		0.0000	1.0000	99.55
19.5	6,366,580		0.0000	1.0000	99.55
20.5	5,893,358		0.0000	1.0000	99.55
21.5	5,515,332	287	0.0001	0.9999	99.55
22.5	5,074,223	115	0.0000	1.0000	99.54
23.5	4,636,413		0.0000	1.0000	99.54
24.5	4,253,327	2,353	0.0006	0.9994	99.54
25.5	3,712,577		0.0000	1.0000	99.48
26.5	3,190,709	4,443	0.0014	0.9986	99.48
27.5	2,883,389	3,076	0.0011	0.9989	99.35
28.5	2,565,289	10,601	0.0041	0.9959	99.24
29.5	2,417,868	3,818	0.0016	0.9984	98.83
30.5	2,290,215	89,081	0.0389	0.9611	98.67
31.5	2,102,489	9,381	0.0045	0.9955	94.84
32.5	1,993,924	8,750	0.0044	0.9956	94.41
33.5	1,973,669	16,330	0.0083	0.9917	94.00
34.5	1,787,444	4,109	0.0023	0.9977	93.22
35.5	1,591,169	21,383	0.0134	0.9866	93.01
36.5	1,454,133	15,598	0.0107	0.9893	91.76
37.5	1,359,869	15,400	0.0113	0.9887	90.77
38.5	1,275,173	12,371	0.0097	0.9903	89.74

SUEZ WATER PENNSYLVANIA, INC.

ACCOUNT 333 SERVICES

ORIGINAL LIFE TABLE, CONT.

PLACEMENT BAND 1919-2013

EXPERIENCE BAND 1994-2013

AGE AT BEGIN OF INTERVAL	EXPOSURES AT BEGINNING OF AGE INTERVAL	RETIREMENTS DURING AGE INTERVAL	RETMT RATIO	SURV RATIO	PCT SURV BEGIN OF INTERVAL
39.5	1,159,622	28,436	0.0245	0.9755	88.87
40.5	1,023,845	28,078	0.0274	0.9726	86.69
41.5	935,467	60,587	0.0648	0.9352	84.32
42.5	838,804	6,655	0.0079	0.9921	78.86
43.5	811,151	1,485	0.0018	0.9982	78.23
44.5	819,421	8,655	0.0106	0.9894	78.09
45.5	801,013	3,910	0.0049	0.9951	77.26
46.5	766,390	5,790	0.0076	0.9924	76.88
47.5	724,607	2,962	0.0041	0.9959	76.30
48.5	673,269	5,364	0.0080	0.9920	75.99
49.5	611,458	5,730	0.0094	0.9906	75.39
50.5	550,838	1,527	0.0028	0.9972	74.68
51.5	497,384	1,340	0.0027	0.9973	74.47
52.5	447,931	1,629	0.0036	0.9964	74.27
53.5	436,572		0.0000	1.0000	74.00
54.5	398,021	615	0.0015	0.9985	74.00
55.5	374,692		0.0000	1.0000	73.89
56.5	348,786		0.0000	1.0000	73.89
57.5	319,247	14,412	0.0451	0.9549	73.89
58.5	262,465	505	0.0019	0.9981	70.55
59.5	230,459	3,985	0.0173	0.9827	70.42
60.5	195,375	1,842	0.0094	0.9906	69.20
61.5	162,566	938	0.0058	0.9942	68.55
62.5	130,217	7,965	0.0612	0.9388	68.15
63.5	102,825	1,052	0.0102	0.9898	63.98
64.5	84,653	3,405	0.0402	0.9598	63.33
65.5	66,968	11,391	0.1701	0.8299	60.78
66.5	52,786	9,020	0.1709	0.8291	50.44
67.5	42,632	6,004	0.1408	0.8592	41.82
68.5	36,284	9,811	0.2704	0.7296	35.93
69.5	26,363	3,631	0.1377	0.8623	26.22
70.5	23,494	1,260	0.0536	0.9464	22.61
71.5	23,136	3,619	0.1564	0.8436	21.39
72.5	18,340	893	0.0487	0.9513	18.05
73.5	10,002	571	0.0571	0.9429	17.17
74.5	9,323	867	0.0929	0.9071	16.19
75.5	8,193	240	0.0293	0.9707	14.68
76.5	7,949	299	0.0376	0.9624	14.25
77.5	6,882	132	0.0192	0.9808	13.72
78.5	5,995	107	0.0178	0.9822	13.45

SUEZ WATER PENNSYLVANIA, INC.

ACCOUNT 333 SERVICES

ORIGINAL LIFE TABLE, CONT.

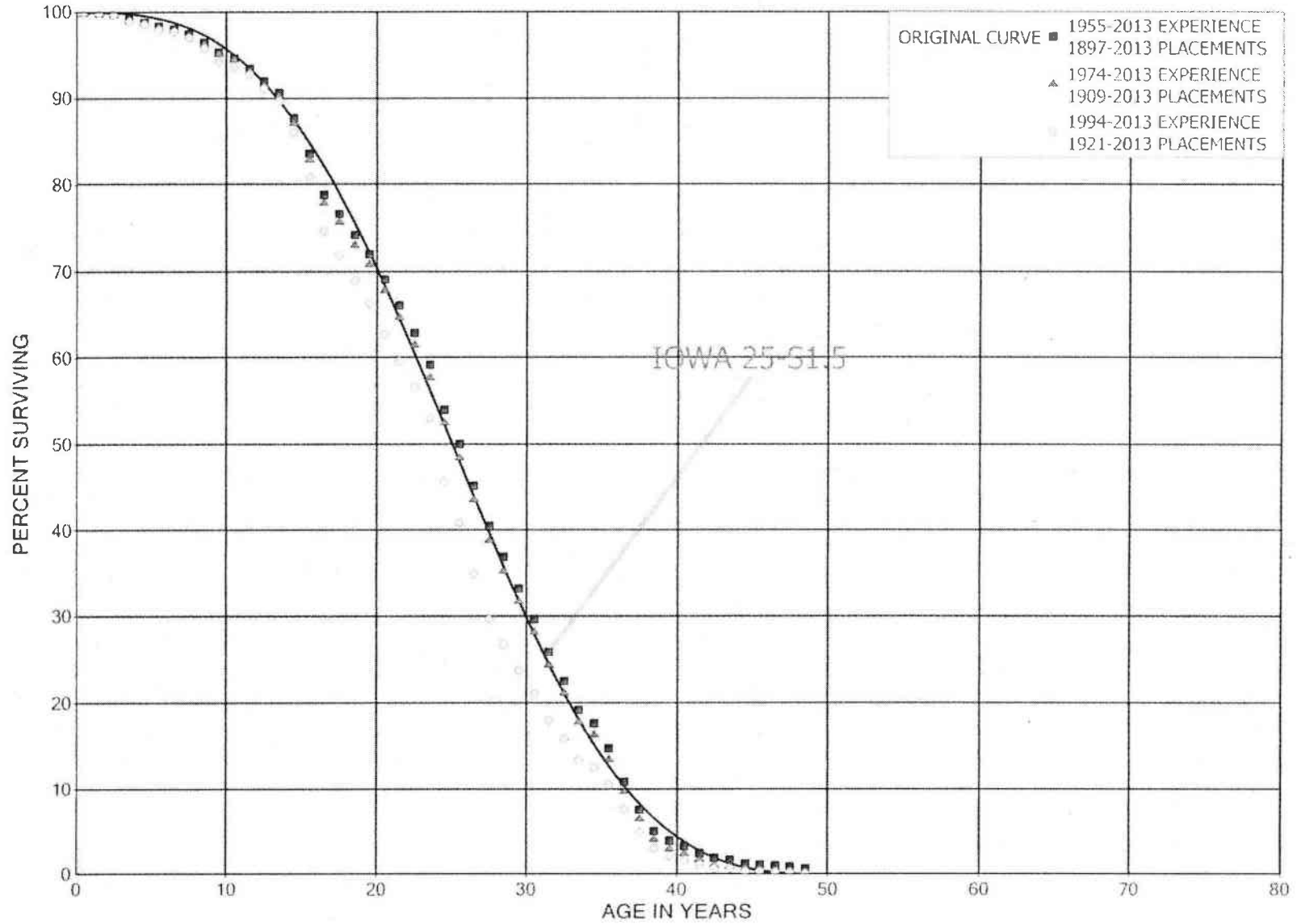
PLACEMENT BAND 1919-2013

EXPERIENCE BAND 1994-2013

AGE AT BEGIN OF INTERVAL	EXPOSURES AT BEGINNING OF AGE INTERVAL	RETIREMENTS DURING AGE INTERVAL	RETMT RATIO	SURV RATIO	PCT SURV BEGIN OF INTERVAL
79.5	5,757	83	0.0144	0.9856	13.21
80.5	5,579		0.0000	1.0000	13.02
81.5	5,461	334	0.0612	0.9388	13.02
82.5	5,087	216	0.0425	0.9575	12.23
83.5	4,786	290	0.0605	0.9395	11.71
84.5	4,385	103	0.0235	0.9765	11.00
85.5	4,191		0.0000	1.0000	10.74
86.5	4,064		0.0000	1.0000	10.74
87.5	3,208		0.0000	1.0000	10.74
88.5	2,230	20	0.0088	0.9912	10.74
89.5	1,308		0.0000	1.0000	10.65
90.5	985		0.0000	1.0000	10.65
91.5	83		0.0000	1.0000	10.65
92.5	56		0.0000	1.0000	10.65
93.5					10.65



SUEZ WATER PENNSYLVANIA, INC.
ACCOUNT 334 METERS
ORIGINAL AND SMOOTH SURVIVOR CURVES



SUEZ WATER PENNSYLVANIA, INC.

ACCOUNT 334 METERS

ORIGINAL LIFE TABLE

PLACEMENT BAND 1897-2013

EXPERIENCE BAND 1955-2013

AGE AT BEGIN OF INTERVAL	EXPOSURES AT BEGINNING OF AGE INTERVAL	RETIREMENTS DURING AGE INTERVAL	RETMT RATIO	SURV RATIO	PCT SURV BEGIN OF INTERVAL
0.0	16,418,165	8,823	0.0005	0.9995	100.00
0.5	14,241,647	10,818	0.0008	0.9992	99.95
1.5	12,748,276	24,263	0.0019	0.9981	99.87
2.5	11,682,800	70,129	0.0060	0.9940	99.68
3.5	10,816,711	37,201	0.0034	0.9966	99.08
4.5	10,477,916	53,985	0.0052	0.9948	98.74
5.5	9,869,014	31,373	0.0032	0.9968	98.23
6.5	8,494,617	46,704	0.0055	0.9945	97.92
7.5	7,888,461	79,130	0.0100	0.9900	97.38
8.5	7,559,952	84,920	0.0112	0.9888	96.40
9.5	7,044,324	49,665	0.0071	0.9929	95.32
10.5	6,690,858	86,121	0.0129	0.9871	94.65
11.5	6,179,729	99,728	0.0161	0.9839	93.43
12.5	5,733,949	82,937	0.0145	0.9855	91.92
13.5	5,055,845	161,052	0.0319	0.9681	90.59
14.5	4,574,376	212,744	0.0465	0.9535	87.71
15.5	3,955,104	225,461	0.0570	0.9430	83.63
16.5	3,384,324	94,747	0.0280	0.9720	78.86
17.5	3,162,039	102,537	0.0324	0.9676	76.65
18.5	2,900,687	85,352	0.0294	0.9706	74.17
19.5	2,598,042	103,588	0.0399	0.9601	71.99
20.5	2,375,142	104,066	0.0438	0.9562	69.12
21.5	2,101,927	101,770	0.0484	0.9516	66.09
22.5	1,827,397	107,269	0.0587	0.9413	62.89
23.5	1,616,497	142,080	0.0879	0.9121	59.20
24.5	1,459,262	108,965	0.0747	0.9253	53.99
25.5	1,335,255	131,820	0.0987	0.9013	49.96
26.5	1,171,077	121,893	0.1041	0.8959	45.03
27.5	1,020,392	88,934	0.0872	0.9128	40.34
28.5	861,687	85,429	0.0991	0.9009	36.83
29.5	743,600	80,065	0.1077	0.8923	33.18
30.5	652,547	83,864	0.1285	0.8715	29.60
31.5	565,927	71,937	0.1271	0.8729	25.80
32.5	476,220	71,454	0.1500	0.8500	22.52
33.5	404,226	31,725	0.0785	0.9215	19.14
34.5	369,344	60,491	0.1638	0.8362	17.64
35.5	308,585	82,139	0.2662	0.7338	14.75
36.5	226,400	69,761	0.3081	0.6919	10.82
37.5	155,282	51,551	0.3320	0.6680	7.49
38.5	103,754	24,471	0.2359	0.7641	5.00

SUEZ WATER PENNSYLVANIA, INC.

ACCOUNT 334 METERS

ORIGINAL LIFE TABLE, CONT.

PLACEMENT BAND 1897-2013

EXPERIENCE BAND 1955-2013

AGE AT BEGIN OF INTERVAL	EXPOSURES AT BEGINNING OF AGE INTERVAL	RETIREMENTS DURING AGE INTERVAL	RETMT RATIO	SURV RATIO	PCT SURV BEGIN OF INTERVAL
39.5	79,342	13,114	0.1653	0.8347	3.82
40.5	66,318	15,572	0.2348	0.7652	3.19
41.5	51,367	13,411	0.2611	0.7389	2.44
42.5	38,014	3,993	0.1050	0.8950	1.80
43.5	34,116	8,352	0.2448	0.7552	1.61
44.5	25,817	3,777	0.1463	0.8537	1.22
45.5	22,072	2,630	0.1191	0.8809	1.04
46.5	19,456	1,268	0.0652	0.9348	0.92
47.5	18,188	4,014	0.2207	0.7793	0.86
48.5	14,234	1,869	0.1313	0.8687	0.67
49.5	12,365	452	0.0365	0.9635	0.58
50.5	11,825	498	0.0421	0.9579	0.56
51.5	11,265	1,136	0.1009	0.8991	0.54
52.5	10,143	1,720	0.1695	0.8305	0.48
53.5	8,295	1,709	0.2061	0.7939	0.40
54.5	6,585	942	0.1430	0.8570	0.32
55.5	5,487	1,510	0.2752	0.7248	0.27
56.5	3,977	700	0.1759	0.8241	0.20
57.5	3,291	269	0.0817	0.9183	0.16
58.5	2,851	510	0.1789	0.8211	0.15
59.5	2,341	548	0.2339	0.7661	0.12
60.5	1,794	156	0.0871	0.9129	0.09
61.5	1,637	140	0.0854	0.9146	0.09
62.5	1,498	778	0.5194	0.4806	0.08
63.5	720	38	0.0530	0.9470	0.04
64.5	682	88	0.1296	0.8704	0.04
65.5	593	83	0.1402	0.8598	0.03
66.5	510	27	0.0539	0.9461	0.03
67.5	483	142	0.2939	0.7061	0.03
68.5	341		0.0000	1.0000	0.02
69.5	341	157	0.4601	0.5399	0.02
70.5	184		0.0000	1.0000	0.01
71.5	184		0.0000	1.0000	0.01
72.5	184	184	1.0000		0.01
73.5					

SUEZ WATER PENNSYLVANIA, INC.

ACCOUNT 334 METERS

ORIGINAL LIFE TABLE

PLACEMENT BAND 1909-2013

EXPERIENCE BAND 1974-2013

AGE AT BEGIN OF INTERVAL	EXPOSURES AT BEGINNING OF AGE INTERVAL	RETIREMENTS DURING AGE INTERVAL	RETMT RATIO	SURV RATIO	PCT SURV BEGIN OF INTERVAL
0.0	15,620,111	8,545	0.0005	0.9995	100.00
0.5	13,470,918	8,885	0.0007	0.9993	99.95
1.5	12,003,024	24,096	0.0020	0.9980	99.88
2.5	10,983,464	69,916	0.0064	0.9936	99.68
3.5	10,136,926	37,183	0.0037	0.9963	99.04
4.5	9,833,045	53,985	0.0055	0.9945	98.68
5.5	9,245,263	31,373	0.0034	0.9966	98.14
6.5	7,881,771	46,626	0.0059	0.9941	97.81
7.5	7,305,329	79,019	0.0108	0.9892	97.23
8.5	7,226,356	84,746	0.0117	0.9883	96.18
9.5	6,735,003	49,544	0.0074	0.9926	95.05
10.5	6,401,586	86,069	0.0134	0.9866	94.35
11.5	5,906,385	99,604	0.0169	0.9831	93.08
12.5	5,475,480	82,937	0.0151	0.9849	91.51
13.5	4,818,887	161,052	0.0334	0.9666	90.12
14.5	4,353,438	212,639	0.0488	0.9512	87.11
15.5	3,747,528	225,062	0.0601	0.9399	82.86
16.5	3,191,017	94,562	0.0296	0.9704	77.88
17.5	2,989,980	102,482	0.0343	0.9657	75.57
18.5	2,747,608	85,329	0.0311	0.9689	72.98
19.5	2,468,048	103,483	0.0419	0.9581	70.72
20.5	2,267,344	103,836	0.0458	0.9542	67.75
21.5	2,012,208	101,144	0.0503	0.9497	64.65
22.5	1,754,964	107,091	0.0610	0.9390	61.40
23.5	1,551,958	141,953	0.0915	0.9085	57.65
24.5	1,400,058	108,829	0.0777	0.9223	52.38
25.5	1,289,586	131,486	0.1020	0.8980	48.31
26.5	1,128,186	121,712	0.1079	0.8921	43.38
27.5	983,103	88,688	0.0902	0.9098	38.70
28.5	826,321	85,144	0.1030	0.8970	35.21
29.5	708,257	79,386	0.1121	0.8879	31.58
30.5	617,427	83,022	0.1345	0.8655	28.04
31.5	534,274	71,071	0.1330	0.8670	24.27
32.5	449,235	70,835	0.1577	0.8423	21.04
33.5	381,112	31,383	0.0823	0.9177	17.73
34.5	347,289	60,184	0.1733	0.8267	16.27
35.5	285,748	81,768	0.2862	0.7138	13.45
36.5	205,611	69,563	0.3383	0.6617	9.60
37.5	135,260	51,255	0.3789	0.6211	6.35
38.5	85,544	24,211	0.2830	0.7170	3.94

SUEZ WATER PENNSYLVANIA, INC.

ACCOUNT 334 METERS

ORIGINAL LIFE TABLE, CONT.

PLACEMENT BAND 1909-2013

EXPERIENCE BAND 1974-2013

AGE AT BEGIN OF INTERVAL	EXPOSURES AT BEGINNING OF AGE INTERVAL	RETIREMENTS DURING AGE INTERVAL	RETMT RATIO	SURV RATIO	PCT SURV BEGIN OF INTERVAL
39.5	62,576	12,829	0.2050	0.7950	2.83
40.5	50,079	14,960	0.2987	0.7013	2.25
41.5	35,941	12,920	0.3595	0.6405	1.58
42.5	24,903	3,577	0.1436	0.8564	1.01
43.5	22,197	7,724	0.3480	0.6520	0.86
44.5	14,795	3,570	0.2413	0.7587	0.56
45.5	11,633	1,749	0.1504	0.8496	0.43
46.5	11,009	1,110	0.1008	0.8992	0.36
47.5	10,230	3,751	0.3667	0.6333	0.33
48.5	6,722	1,582	0.2354	0.7646	0.21
49.5	5,579	452	0.0810	0.9190	0.16
50.5	5,543	446	0.0805	0.9195	0.15
51.5	5,300	648	0.1223	0.8777	0.13
52.5	5,073	1,179	0.2324	0.7676	0.12
53.5	5,437	1,615	0.2970	0.7030	0.09
54.5	5,967	942	0.1578	0.8422	0.06
55.5	4,869	1,510	0.3102	0.6898	0.05
56.5	3,359	700	0.2083	0.7917	0.04
57.5	2,659	269	0.1012	0.8988	0.03
58.5	2,220	510	0.2298	0.7702	0.03
59.5	1,710	548	0.3203	0.6797	0.02
60.5	1,712	143	0.0834	0.9166	0.01
61.5	1,569	126	0.0805	0.9195	0.01
62.5	1,443	778	0.5390	0.4610	0.01
63.5	665	38	0.0574	0.9426	0.01
64.5	641	88	0.1378	0.8622	0.01
65.5	553	83	0.1504	0.8496	0.00
66.5	470	14	0.0298	0.9702	0.00
67.5	456	128	0.2817	0.7183	0.00
68.5	327		0.0000	1.0000	0.00
69.5	327	157	0.4791	0.5209	0.00
70.5	170		0.0000	1.0000	0.00
71.5	170		0.0000	1.0000	0.00
72.5	170	170	1.0000		0.00
73.5					

SUEZ WATER PENNSYLVANIA, INC.

ACCOUNT 334 METERS

ORIGINAL LIFE TABLE

PLACEMENT BAND 1921-2013

EXPERIENCE BAND 1994-2013

AGE AT BEGIN OF INTERVAL	EXPOSURES AT BEGINNING OF AGE INTERVAL	RETIREMENTS DURING AGE INTERVAL	RETMT RATIO	SURV RATIO	PCT SURV BEGIN OF INTERVAL
0.0	12,913,376	8,504	0.0007	0.9993	100.00
0.5	10,951,531	8,885	0.0008	0.9992	99.93
1.5	9,718,984	23,288	0.0024	0.9976	99.85
2.5	8,926,427	67,924	0.0076	0.9924	99.61
3.5	8,246,682	31,814	0.0039	0.9961	98.86
4.5	8,051,833	52,522	0.0065	0.9935	98.47
5.5	7,543,558	19,290	0.0026	0.9974	97.83
6.5	6,295,307	41,125	0.0065	0.9935	97.58
7.5	5,924,085	76,720	0.0130	0.9870	96.94
8.5	5,784,949	81,772	0.0141	0.9859	95.69
9.5	5,425,372	42,920	0.0079	0.9921	94.34
10.5	5,160,239	47,998	0.0093	0.9907	93.59
11.5	4,763,398	82,870	0.0174	0.9826	92.72
12.5	4,414,943	72,710	0.0165	0.9835	91.11
13.5	3,842,634	152,443	0.0397	0.9603	89.61
14.5	3,418,621	205,215	0.0600	0.9400	86.05
15.5	2,835,679	217,987	0.0769	0.9231	80.89
16.5	2,324,974	88,083	0.0379	0.9621	74.67
17.5	2,132,843	87,173	0.0409	0.9591	71.84
18.5	1,920,339	73,772	0.0384	0.9616	68.90
19.5	1,672,428	91,274	0.0546	0.9454	66.26
20.5	1,499,837	72,891	0.0486	0.9514	62.64
21.5	1,289,792	63,490	0.0492	0.9508	59.60
22.5	1,103,250	72,858	0.0660	0.9340	56.66
23.5	939,348	130,818	0.1393	0.8607	52.92
24.5	816,698	86,030	0.1053	0.8947	45.55
25.5	734,132	107,314	0.1462	0.8538	40.75
26.5	608,759	89,695	0.1473	0.8527	34.79
27.5	513,481	51,211	0.0997	0.9003	29.67
28.5	574,412	65,281	0.1136	0.8864	26.71
29.5	494,625	55,541	0.1123	0.8877	23.67
30.5	438,346	65,178	0.1487	0.8513	21.02
31.5	378,005	43,798	0.1159	0.8841	17.89
32.5	323,540	50,664	0.1566	0.8434	15.82
33.5	279,969	17,198	0.0614	0.9386	13.34
34.5	264,021	41,941	0.1589	0.8411	12.52
35.5	223,475	63,729	0.2852	0.7148	10.53
36.5	159,668	56,023	0.3509	0.6491	7.53
37.5	104,107	40,892	0.3928	0.6072	4.89
38.5	64,247	18,630	0.2900	0.7100	2.97

SUEZ WATER PENNSYLVANIA, INC.

ACCOUNT 334 METERS

ORIGINAL LIFE TABLE, CONT.

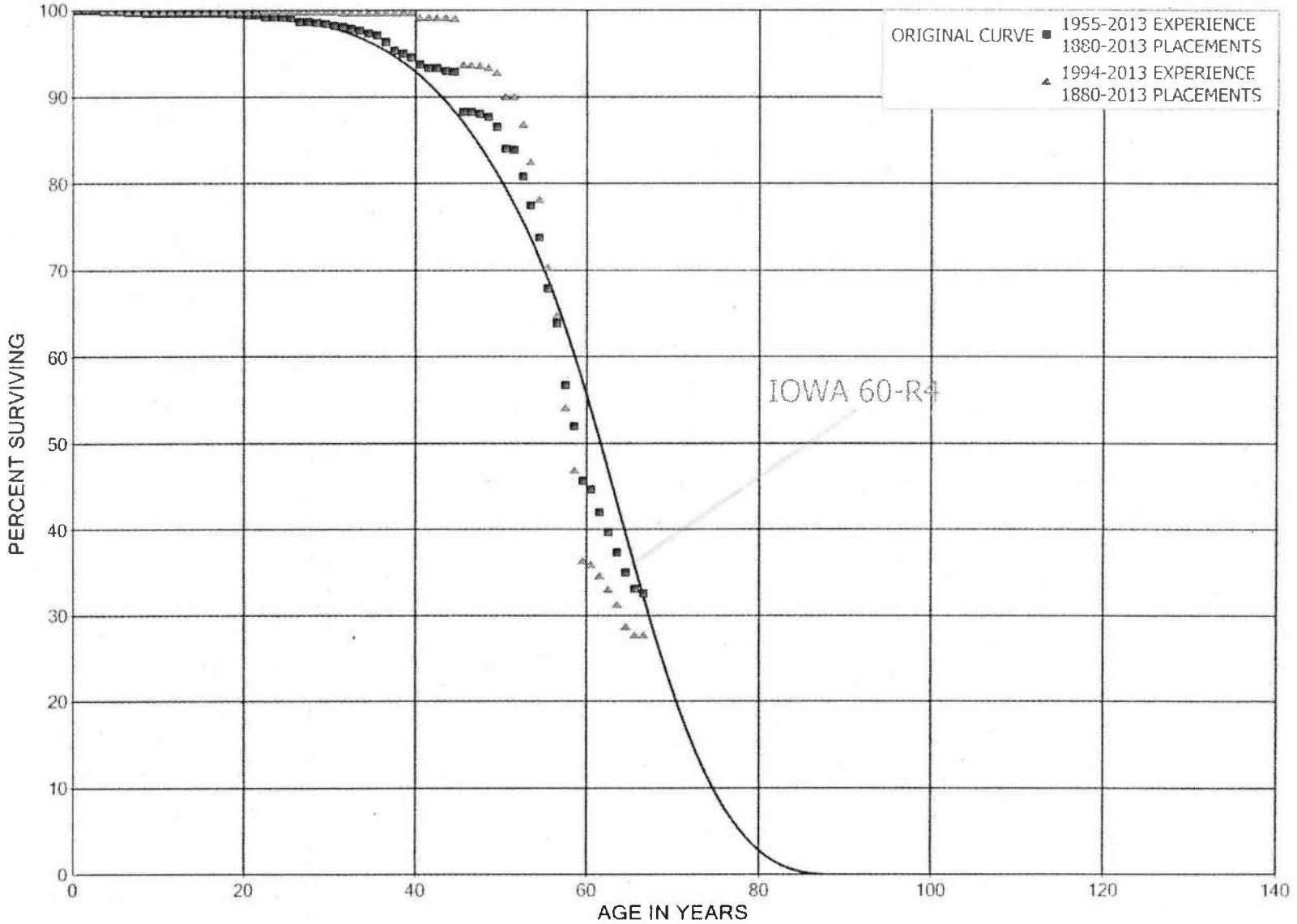
PLACEMENT BAND 1921-2013

EXPERIENCE BAND 1994-2013

AGE AT BEGIN OF INTERVAL	EXPOSURES AT BEGINNING OF AGE INTERVAL	RETIREMENTS DURING AGE INTERVAL	RETMT RATIO	SURV RATIO	PCT SURV BEGIN OF INTERVAL
39.5	47,236	10,325	0.2186	0.7814	2.11
40.5	38,904	12,833	0.3299	0.6701	1.65
41.5	26,129	11,187	0.4281	0.5719	1.10
42.5	14,990	1,423	0.0949	0.9051	0.63
43.5	14,015	6,003	0.4283	0.5717	0.57
44.5	8,149	2,275	0.2792	0.7208	0.33
45.5	6,773	833	0.1229	0.8771	0.24
46.5	6,041	964	0.1596	0.8404	0.21
47.5	5,077	2,799	0.5514	0.4486	0.17
48.5	2,381	1,134	0.4763	0.5237	0.08
49.5	1,247	128	0.1025	0.8975	0.04
50.5	1,304	233	0.1788	0.8212	0.04
51.5	1,085	235	0.2168	0.7832	0.03
52.5	1,146	1,085	0.9473	0.0527	0.02
53.5	1,123	1,063	0.9464	0.0536	0.00
54.5	61	48	0.7848	0.2152	0.00
55.5	14	14	1.0000		0.00
56.5	75	75	1.0000		
57.5					
58.5					
59.5	5	5	1.0000		
60.5	98	98	1.0000		
61.5	122	122	1.0000		
62.5	205	205	1.0000		
63.5					
64.5	88	88	1.0000		
65.5	83	83	1.0000		
66.5					
67.5	128	128	1.0000		
68.5					
69.5	157	157	1.0000		
70.5					
71.5					
72.5	170	170	1.0000		
73.5					



SUEZ WATER PENNSYLVANIA, INC.
ACCOUNT 335 HYDRANTS
ORIGINAL AND SMOOTH SURVIVOR CURVES



SUEZ WATER PENNSYLVANIA, INC.

ACCOUNT 335 HYDRANTS

ORIGINAL LIFE TABLE

PLACEMENT BAND 1880-2013

EXPERIENCE BAND 1955-2013

AGE AT BEGIN OF INTERVAL	EXPOSURES AT BEGINNING OF AGE INTERVAL	RETIREMENTS DURING AGE INTERVAL	RETMT RATIO	SURV RATIO	PCT SURV BEGIN OF INTERVAL
0.0	6,326,110	0	0.0000	1.0000	100.00
0.5	6,201,885		0.0000	1.0000	100.00
1.5	6,055,677		0.0000	1.0000	100.00
2.5	5,812,828	9,998	0.0017	0.9983	100.00
3.5	5,583,439	389	0.0001	0.9999	99.83
4.5	5,303,588	1,097	0.0002	0.9998	99.82
5.5	5,040,038	5,261	0.0010	0.9990	99.80
6.5	4,782,727	530	0.0001	0.9999	99.70
7.5	4,497,582	1,744	0.0004	0.9996	99.69
8.5	4,259,954	151	0.0000	1.0000	99.65
9.5	3,912,243	445	0.0001	0.9999	99.64
10.5	3,711,988	708	0.0002	0.9998	99.63
11.5	3,539,995	373	0.0001	0.9999	99.61
12.5	3,324,282	229	0.0001	0.9999	99.60
13.5	3,113,168	120	0.0000	1.0000	99.60
14.5	2,860,801	302	0.0001	0.9999	99.59
15.5	2,708,278	464	0.0002	0.9998	99.58
16.5	2,561,016	83	0.0000	1.0000	99.56
17.5	2,445,132	714	0.0003	0.9997	99.56
18.5	2,321,042	725	0.0003	0.9997	99.53
19.5	2,199,964	1,624	0.0007	0.9993	99.50
20.5	2,088,563	477	0.0002	0.9998	99.43
21.5	2,008,486	3,656	0.0018	0.9982	99.40
22.5	1,896,159	1,021	0.0005	0.9995	99.22
23.5	1,742,385	324	0.0002	0.9998	99.17
24.5	1,605,629	753	0.0005	0.9995	99.15
25.5	1,465,711	6,861	0.0047	0.9953	99.11
26.5	1,300,582	357	0.0003	0.9997	98.64
27.5	1,180,225	1,839	0.0016	0.9984	98.61
28.5	1,102,393	1,130	0.0010	0.9990	98.46
29.5	1,040,806	1,650	0.0016	0.9984	98.36
30.5	996,012	1,732	0.0017	0.9983	98.20
31.5	950,773	2,431	0.0026	0.9974	98.03
32.5	888,582	1,382	0.0016	0.9984	97.78
33.5	836,248	2,566	0.0031	0.9969	97.63
34.5	771,532	1,779	0.0023	0.9977	97.33
35.5	686,102	5,775	0.0084	0.9916	97.11
36.5	628,042	6,372	0.0101	0.9899	96.29
37.5	552,332	2,189	0.0040	0.9960	95.31
38.5	504,273	1,994	0.0040	0.9960	94.93

SUEZ WATER PENNSYLVANIA, INC.

ACCOUNT 335 HYDRANTS

ORIGINAL LIFE TABLE, CONT.

PLACEMENT BAND 1880-2013

EXPERIENCE BAND 1955-2013

AGE AT BEGIN OF INTERVAL	EXPOSURES AT BEGINNING OF AGE INTERVAL	RETIREMENTS DURING AGE INTERVAL	RETMT RATIO	SURV RATIO	PCT SURV BEGIN OF INTERVAL
39.5	450,302	4,012	0.0089	0.9911	94.56
40.5	370,033	1,558	0.0042	0.9958	93.72
41.5	344,864	254	0.0007	0.9993	93.32
42.5	324,962	999	0.0031	0.9969	93.25
43.5	294,670	549	0.0019	0.9981	92.97
44.5	260,048	12,618	0.0485	0.9515	92.79
45.5	233,022	45	0.0002	0.9998	88.29
46.5	213,314	603	0.0028	0.9972	88.27
47.5	195,025	600	0.0031	0.9969	88.02
48.5	182,228	2,334	0.0128	0.9872	87.75
49.5	151,336	4,480	0.0296	0.9704	86.63
50.5	137,230	274	0.0020	0.9980	84.06
51.5	125,557	4,552	0.0363	0.9637	83.90
52.5	105,024	4,399	0.0419	0.9581	80.86
53.5	87,591	4,187	0.0478	0.9522	77.47
54.5	73,447	5,959	0.0811	0.9189	73.77
55.5	57,126	3,342	0.0585	0.9415	67.78
56.5	41,419	4,602	0.1111	0.8889	63.82
57.5	32,414	2,718	0.0839	0.9161	56.72
58.5	28,893	3,521	0.1219	0.8781	51.97
59.5	25,934	594	0.0229	0.9771	45.64
60.5	24,267	1,465	0.0604	0.9396	44.59
61.5	22,432	1,231	0.0549	0.9451	41.90
62.5	20,705	1,207	0.0583	0.9417	39.60
63.5	18,937	1,202	0.0635	0.9365	37.29
64.5	17,744	965	0.0544	0.9456	34.92
65.5	15,671	267	0.0170	0.9830	33.02
66.5	15,206	293	0.0193	0.9807	32.46
67.5	13,409	192	0.0143	0.9857	31.83
68.5	12,713	39	0.0031	0.9969	31.38
69.5	12,674	151	0.0119	0.9881	31.28
70.5	12,461	297	0.0238	0.9762	30.91
71.5	11,919	126	0.0106	0.9894	30.17
72.5	11,380	785	0.0689	0.9311	29.85
73.5	10,595	206	0.0194	0.9806	27.80
74.5	10,889		0.0000	1.0000	27.26
75.5	9,275	336	0.0362	0.9638	27.26
76.5	7,834	205	0.0262	0.9738	26.27
77.5	7,279	304	0.0417	0.9583	25.58
78.5	6,510	280	0.0431	0.9569	24.51

SUEZ WATER PENNSYLVANIA, INC.

ACCOUNT 335 HYDRANTS

ORIGINAL LIFE TABLE, CONT.

PLACEMENT BAND 1880-2013

EXPERIENCE BAND 1955-2013

AGE AT BEGIN OF INTERVAL	EXPOSURES AT BEGINNING OF AGE INTERVAL	RETIREMENTS DURING AGE INTERVAL	RETMT RATIO	SURV RATIO	PCT SURV BEGIN OF INTERVAL
79.5	6,229	67	0.0108	0.9892	23.46
80.5	5,975	575	0.0962	0.9038	23.21
81.5	5,046		0.0000	1.0000	20.97
82.5	4,884	301	0.0616	0.9384	20.97
83.5	4,229	238	0.0563	0.9437	19.68
84.5	3,733	57	0.0153	0.9847	18.57
85.5	3,112	57	0.0182	0.9818	18.29
86.5	2,881		0.0000	1.0000	17.96
87.5	2,503	34	0.0135	0.9865	17.96
88.5	1,142	0	0.0000	1.0000	17.71
89.5	1,059		0.0000	1.0000	17.71
90.5	1,032	33	0.0320	0.9680	17.71
91.5	961		0.0000	1.0000	17.15
92.5	961	33	0.0344	0.9656	17.15
93.5	928		0.0000	1.0000	16.56
94.5	928	33	0.0356	0.9644	16.56
95.5	895	15	0.0165	0.9835	15.97
96.5	866		0.0000	1.0000	15.71
97.5	866		0.0000	1.0000	15.71
98.5	820	57	0.0697	0.9303	15.71
99.5	678		0.0000	1.0000	14.61
100.5	678	81	0.1192	0.8808	14.61
101.5	535	33	0.0617	0.9383	12.87
102.5	502	4	0.0075	0.9925	12.08
103.5	498	51	0.1024	0.8976	11.99
104.5	441		0.0000	1.0000	10.76
105.5	435		0.0000	1.0000	10.76
106.5	435		0.0000	1.0000	10.76
107.5	430	51	0.1187	0.8813	10.76
108.5	379		0.0000	1.0000	9.48
109.5	379	4	0.0099	0.9901	9.48
110.5	375		0.0000	1.0000	9.39
111.5	375		0.0000	1.0000	9.39
112.5	375		0.0000	1.0000	9.39
113.5	369	154	0.4171	0.5829	9.39
114.5	215	128	0.5958	0.4042	5.47
115.5	5		0.0000	1.0000	2.21
116.5	5		0.0000	1.0000	2.21
117.5	5		0.0000	1.0000	2.21
118.5	5		0.0000	1.0000	2.21

SUEZ WATER PENNSYLVANIA, INC.

ACCOUNT 335 HYDRANTS

ORIGINAL LIFE TABLE, CONT.

PLACEMENT BAND 1880-2013

EXPERIENCE BAND 1955-2013

AGE AT BEGIN OF INTERVAL	EXPOSURES AT BEGINNING OF AGE INTERVAL	RETIREMENTS DURING AGE INTERVAL	RETMT RATIO	SURV RATIO	PCT SURV BEGIN OF INTERVAL
119.5	5		0.0000	1.0000	2.21
120.5	5		0.0000	1.0000	2.21
121.5	5		0.0000	1.0000	2.21
122.5	5		0.0000	1.0000	2.21
123.5	5		0.0000	1.0000	2.21
124.5	5		0.0000	1.0000	2.21
125.5	5		0.0000	1.0000	2.21
126.5	5		0.0000	1.0000	2.21
127.5	5		0.0000	1.0000	2.21
128.5	5		0.0000	1.0000	2.21
129.5	5		0.0000	1.0000	2.21
130.5	5		0.0000	1.0000	2.21
131.5	5		0.0000	1.0000	2.21
132.5	5		0.0000	1.0000	2.21
133.5					2.21

SUEZ WATER PENNSYLVANIA, INC.

ACCOUNT 335 HYDRANTS

ORIGINAL LIFE TABLE

PLACEMENT BAND 1880-2013

EXPERIENCE BAND 1994-2013

AGE AT BEGIN OF INTERVAL	EXPOSURES AT BEGINNING OF AGE INTERVAL	RETIREMENTS DURING AGE INTERVAL	RETMT RATIO	SURV RATIO	PCT SURV BEGIN OF INTERVAL
0.0	4,202,386		0.0000	1.0000	100.00
0.5	4,176,800		0.0000	1.0000	100.00
1.5	4,102,668		0.0000	1.0000	100.00
2.5	3,962,264	9,450	0.0024	0.9976	100.00
3.5	3,879,460	13	0.0000	1.0000	99.76
4.5	3,733,714		0.0000	1.0000	99.76
5.5	3,606,825	5,261	0.0015	0.9985	99.76
6.5	3,504,402		0.0000	1.0000	99.62
7.5	3,333,891		0.0000	1.0000	99.62
8.5	3,175,224		0.0000	1.0000	99.62
9.5	2,889,300		0.0000	1.0000	99.62
10.5	2,732,223		0.0000	1.0000	99.62
11.5	2,604,456		0.0000	1.0000	99.62
12.5	2,446,344		0.0000	1.0000	99.62
13.5	2,285,130		0.0000	1.0000	99.62
14.5	2,092,000		0.0000	1.0000	99.62
15.5	2,021,387		0.0000	1.0000	99.62
16.5	1,923,720		0.0000	1.0000	99.62
17.5	1,875,561		0.0000	1.0000	99.62
18.5	1,796,292		0.0000	1.0000	99.62
19.5	1,724,216		0.0000	1.0000	99.62
20.5	1,691,840		0.0000	1.0000	99.62
21.5	1,635,185		0.0000	1.0000	99.62
22.5	1,545,053		0.0000	1.0000	99.62
23.5	1,420,282		0.0000	1.0000	99.62
24.5	1,312,792		0.0000	1.0000	99.62
25.5	1,185,291		0.0000	1.0000	99.62
26.5	1,045,357		0.0000	1.0000	99.62
27.5	943,087	361	0.0004	0.9996	99.62
28.5	878,471		0.0000	1.0000	99.58
29.5	844,276		0.0000	1.0000	99.58
30.5	810,414	333	0.0004	0.9996	99.58
31.5	777,782	125	0.0002	0.9998	99.54
32.5	734,110		0.0000	1.0000	99.52
33.5	697,809		0.0000	1.0000	99.52
34.5	646,796		0.0000	1.0000	99.52
35.5	574,264	105	0.0002	0.9998	99.52
36.5	540,222		0.0000	1.0000	99.50
37.5	477,404		0.0000	1.0000	99.50
38.5	440,244	154	0.0003	0.9997	99.50

SUEZ WATER PENNSYLVANIA, INC.

ACCOUNT 335 HYDRANTS

ORIGINAL LIFE TABLE, CONT.

PLACEMENT BAND 1880-2013			EXPERIENCE BAND 1994-2013			
AGE AT BEGIN OF INTERVAL	EXPOSURES AT BEGINNING OF AGE INTERVAL	RETIREMENTS DURING AGE INTERVAL	RETMT RATIO	SURV RATIO	PCT SURV BEGIN OF INTERVAL	
39.5	399,052	2,085	0.0052	0.9948	99.47	
40.5	322,041		0.0000	1.0000	98.95	
41.5	301,871		0.0000	1.0000	98.95	
42.5	281,842		0.0000	1.0000	98.95	
43.5	254,736	183	0.0007	0.9993	98.95	
44.5	222,831	12,218	0.0548	0.9452	98.88	
45.5	198,012		0.0000	1.0000	93.46	
46.5	179,993	95	0.0005	0.9995	93.46	
47.5	164,658	400	0.0024	0.9976	93.41	
48.5	153,044	883	0.0058	0.9942	93.18	
49.5	123,752	3,686	0.0298	0.9702	92.64	
50.5	110,536		0.0000	1.0000	89.88	
51.5	100,699	3,588	0.0356	0.9644	89.88	
52.5	82,077	4,095	0.0499	0.9501	86.68	
53.5	66,805	3,441	0.0515	0.9485	82.35	
54.5	54,720	5,542	0.1013	0.8987	78.11	
55.5	40,429	3,198	0.0791	0.9209	70.20	
56.5	25,570	4,237	0.1657	0.8343	64.65	
57.5	17,281	2,322	0.1344	0.8656	53.94	
58.5	14,817	3,323	0.2243	0.7757	46.69	
59.5	11,673	166	0.0142	0.9858	36.22	
60.5	11,098	423	0.0381	0.9619	35.70	
61.5	11,564	491	0.0425	0.9575	34.34	
62.5	11,138	607	0.0545	0.9455	32.88	
63.5	10,323	860	0.0833	0.9167	31.09	
64.5	9,424	348	0.0369	0.9631	28.50	
65.5	9,121		0.0000	1.0000	27.45	
66.5	9,097	27	0.0030	0.9970	27.45	
67.5	8,030	89	0.0111	0.9889	27.37	
68.5	8,934	39	0.0044	0.9956	27.07	
69.5	9,035	85	0.0094	0.9906	26.95	
70.5	9,145	170	0.0186	0.9814	26.69	
71.5	8,816	126	0.0143	0.9857	26.20	
72.5	8,276	730	0.0881	0.9119	25.82	
73.5	7,547	48	0.0063	0.9937	23.55	
74.5	7,499		0.0000	1.0000	23.40	
75.5	5,885		0.0000	1.0000	23.40	
76.5	4,933	57	0.0116	0.9884	23.40	
77.5	4,526		0.0000	1.0000	23.13	
78.5	4,107	140	0.0340	0.9660	23.13	

SUEZ WATER PENNSYLVANIA, INC.

ACCOUNT 335 HYDRANTS

ORIGINAL LIFE TABLE, CONT.

PLACEMENT BAND 1880-2013

EXPERIENCE BAND 1994-2013

AGE AT BEGIN OF INTERVAL	EXPOSURES AT BEGINNING OF AGE INTERVAL	RETIREMENTS DURING AGE INTERVAL	RETMT RATIO	SURV RATIO	PCT SURV BEGIN OF INTERVAL
79.5	4,052		0.0000	1.0000	22.34
80.5	3,865		0.0000	1.0000	22.34
81.5	3,641		0.0000	1.0000	22.34
82.5	3,479		0.0000	1.0000	22.34
83.5	3,125	68	0.0217	0.9783	22.34
84.5	2,805		0.0000	1.0000	21.85
85.5	2,247		0.0000	1.0000	21.85
86.5	2,072		0.0000	1.0000	21.85
87.5	1,700		0.0000	1.0000	21.85
88.5	373		0.0000	1.0000	21.85
89.5	290		0.0000	1.0000	21.85
90.5	263		0.0000	1.0000	21.85
91.5	225		0.0000	1.0000	21.85
92.5	225		0.0000	1.0000	21.85
93.5	230		0.0000	1.0000	21.85
94.5	230		0.0000	1.0000	21.85
95.5	344		0.0000	1.0000	21.85
96.5	330		0.0000	1.0000	21.85
97.5	330		0.0000	1.0000	21.85
98.5	283	32	0.1112	0.8888	21.85
99.5	167		0.0000	1.0000	19.42
100.5	167		0.0000	1.0000	19.42
101.5	105		0.0000	1.0000	19.42
102.5	105		0.0000	1.0000	19.42
103.5	105		0.0000	1.0000	19.42
104.5	99		0.0000	1.0000	19.42
105.5	93		0.0000	1.0000	19.42
106.5	93		0.0000	1.0000	19.42
107.5	88		0.0000	1.0000	19.42
108.5	88		0.0000	1.0000	19.42
109.5	88		0.0000	1.0000	19.42
110.5	88		0.0000	1.0000	19.42
111.5	88		0.0000	1.0000	19.42
112.5	88		0.0000	1.0000	19.42
113.5	369	154	0.4171	0.5829	19.42
114.5	215	128	0.5958	0.4042	11.32
115.5	5		0.0000	1.0000	4.58
116.5	5		0.0000	1.0000	4.58
117.5	5		0.0000	1.0000	4.58
118.5	5		0.0000	1.0000	4.58

SUEZ WATER PENNSYLVANIA, INC.

ACCOUNT 335 HYDRANTS

ORIGINAL LIFE TABLE, CONT.

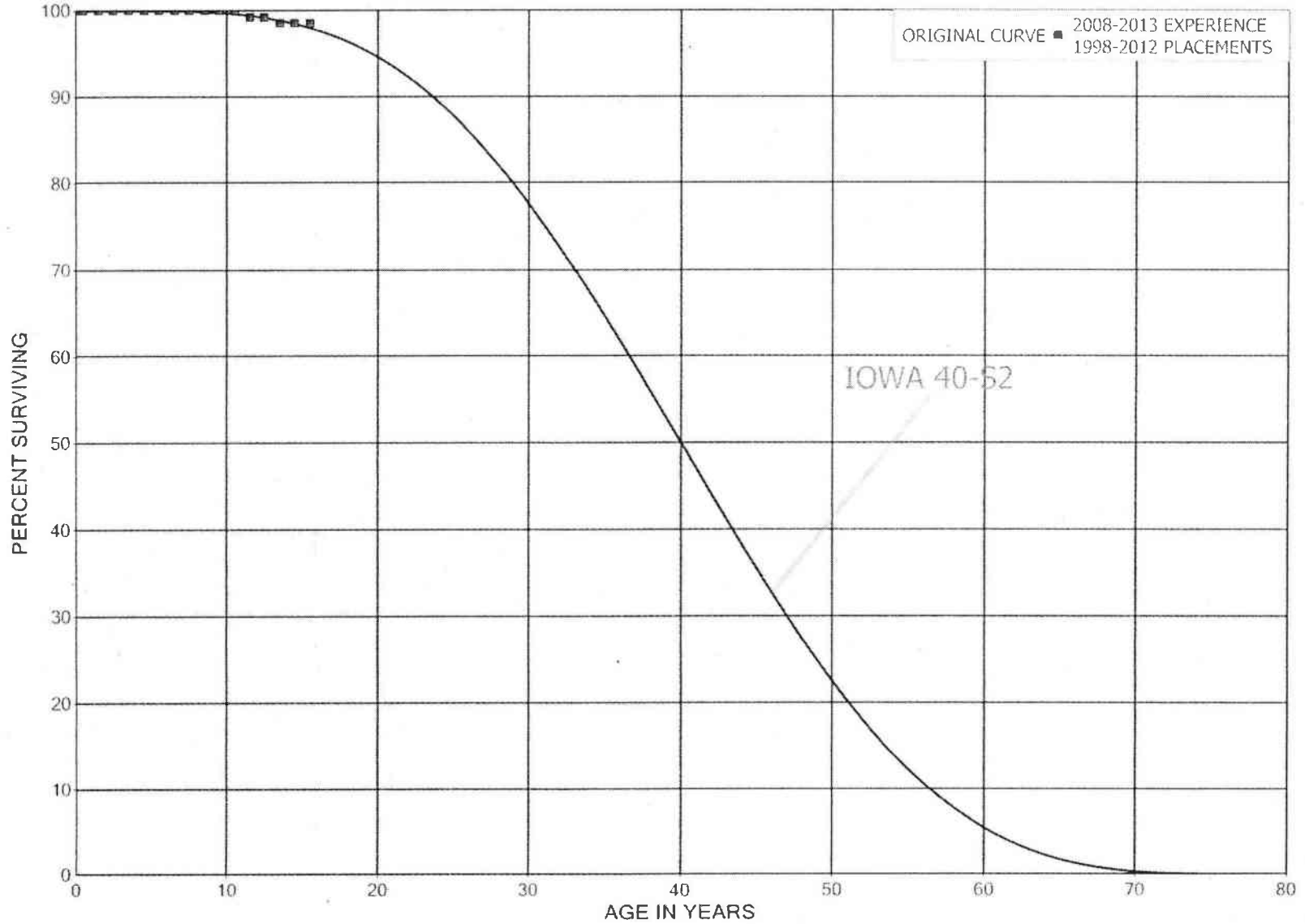
PLACEMENT BAND 1880-2013

EXPERIENCE BAND 1994-2013

AGE AT BEGIN OF INTERVAL	EXPOSURES AT BEGINNING OF AGE INTERVAL	RETIREMENTS DURING AGE INTERVAL	RETMT RATIO	SURV RATIO	PCT SURV BEGIN OF INTERVAL
119.5	5		0.0000	1.0000	4.58
120.5	5		0.0000	1.0000	4.58
121.5	5		0.0000	1.0000	4.58
122.5	5		0.0000	1.0000	4.58
123.5	5		0.0000	1.0000	4.58
124.5	5		0.0000	1.0000	4.58
125.5	5		0.0000	1.0000	4.58
126.5	5		0.0000	1.0000	4.58
127.5	5		0.0000	1.0000	4.58
128.5	5		0.0000	1.0000	4.58
129.5	5		0.0000	1.0000	4.58
130.5	5		0.0000	1.0000	4.58
131.5	5		0.0000	1.0000	4.58
132.5	5		0.0000	1.0000	4.58
133.5					4.58



SUEZ WATER PENNSYLVANIA, INC.
ACCOUNT 339 OTHER PLANT AND MISCELLANEOUS EQUIPMENT
ORIGINAL AND SMOOTH SURVIVOR CURVES



SUEZ WATER PENNSYLVANIA, INC.

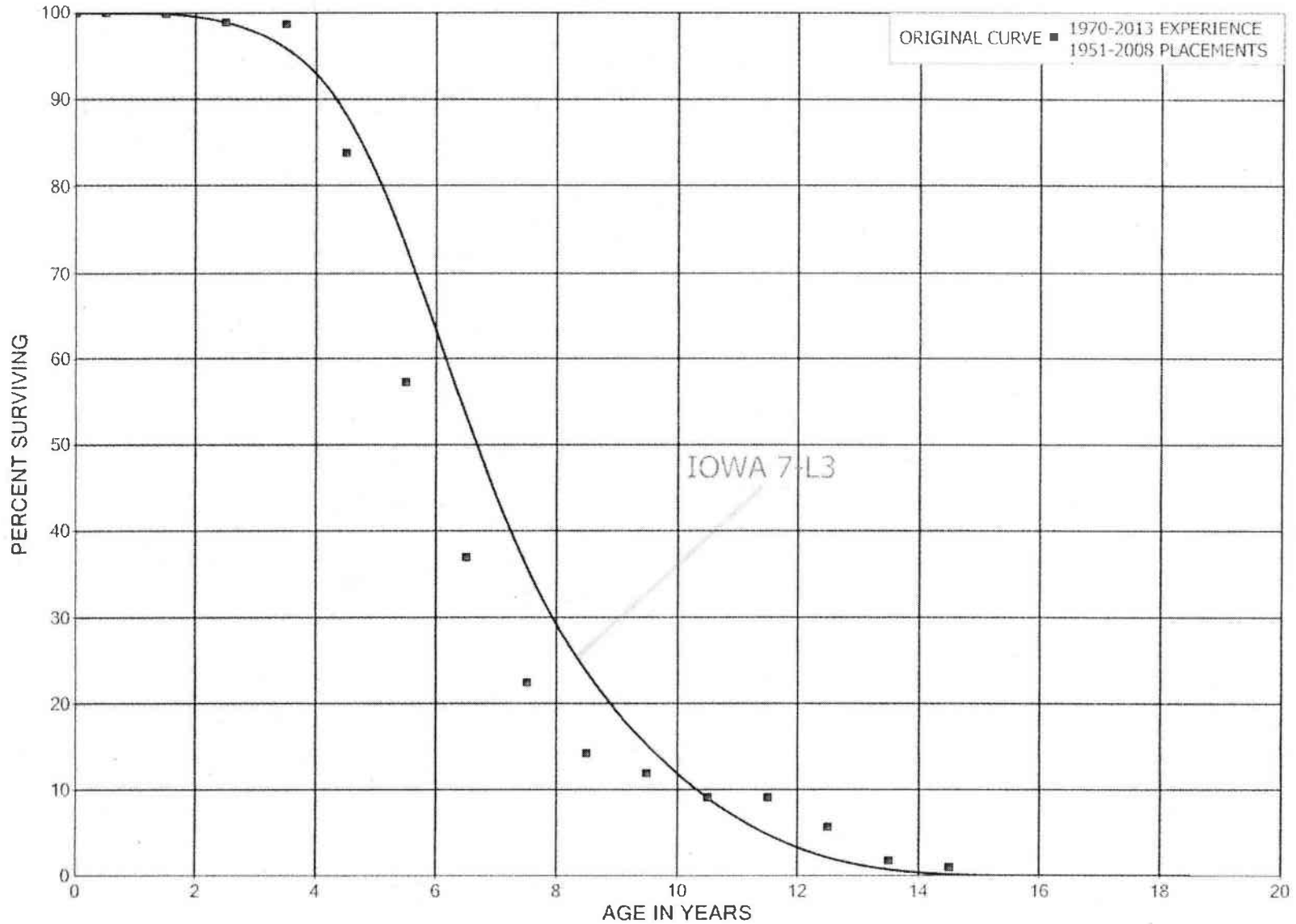
ACCOUNT 339 OTHER PLANT AND MISCELLANEOUS EQUIPMENT

ORIGINAL LIFE TABLE

PLACEMENT BAND 1998-2012			EXPERIENCE BAND 2008-2013		
AGE AT BEGIN OF INTERVAL	EXPOSURES AT BEGINNING OF AGE INTERVAL	RETIREMENTS DURING AGE INTERVAL	RETMT RATIO	SURV RATIO	PCT SURV BEGIN OF INTERVAL
0.0	18,526		0.0000	1.0000	100.00
0.5	28,703		0.0000	1.0000	100.00
1.5	34,327		0.0000	1.0000	100.00
2.5	34,327		0.0000	1.0000	100.00
3.5	34,327		0.0000	1.0000	100.00
4.5	21,085		0.0000	1.0000	100.00
5.5	24,086		0.0000	1.0000	100.00
6.5	13,909		0.0000	1.0000	100.00
7.5	8,243		0.0000	1.0000	100.00
8.5	8,243		0.0000	1.0000	100.00
9.5	512,836		0.0000	1.0000	100.00
10.5	512,836	4,000	0.0078	0.9922	100.00
11.5	500,593		0.0000	1.0000	99.22
12.5	500,593	3,750	0.0075	0.9925	99.22
13.5	496,843		0.0000	1.0000	98.48
14.5	496,843		0.0000	1.0000	98.48
15.5					98.48



SUEZ WATER PENNSYLVANIA, INC.
ACCOUNT 341 TRANSPORTATION EQUIPMENT - TRUCKS
ORIGINAL AND SMOOTH SURVIVOR CURVES



SUEZ WATER PENNSYLVANIA, INC.

ACCOUNT 341 TRANSPORTATION EQUIPMENT - TRUCKS

ORIGINAL LIFE TABLE

PLACEMENT BAND 1951-2008			EXPERIENCE BAND 1970-2013		
AGE AT BEGIN OF INTERVAL	EXPOSURES AT BEGINNING OF AGE INTERVAL	RETIREMENTS DURING AGE INTERVAL	RETMT RATIO	SURV RATIO	PCT SURV BEGIN OF INTERVAL
0.0	1,249,173		0.0000	1.0000	100.00
0.5	1,253,086	2,165	0.0017	0.9983	100.00
1.5	1,256,299	12,748	0.0101	0.9899	99.83
2.5	1,243,198	1,849	0.0015	0.9985	98.81
3.5	1,245,655	187,333	0.1504	0.8496	98.67
4.5	1,073,212	339,485	0.3163	0.6837	83.83
5.5	729,452	259,539	0.3558	0.6442	57.31
6.5	470,511	184,997	0.3932	0.6068	36.92
7.5	252,984	92,573	0.3659	0.6341	22.40
8.5	162,263	26,887	0.1657	0.8343	14.21
9.5	135,376	32,002	0.2364	0.7636	11.85
10.5	103,374		0.0000	1.0000	9.05
11.5	103,374	38,934	0.3766	0.6234	9.05
12.5	64,440	44,362	0.6884	0.3116	5.64
13.5	20,078	9,651	0.4807	0.5193	1.76
14.5	10,427	1,354	0.1299	0.8701	0.91
15.5	9,073		0.0000	1.0000	0.79
16.5	9,073		0.0000	1.0000	0.79
17.5	9,073	9,073	1.0000		0.79
18.5	248		0.0000	1.0000	
19.5	248		0.0000		
20.5	248	248	1.0000		
21.5					

**PART VII. DETAILED DEPRECIATION
CALCULATIONS**

CUMULATIVE DEPRECIATED ORIGINAL COST

SUEZ WATER PENNSYLVANIA, INC.

CUMULATIVE DEPRECIATED ORIGINAL COST BY YEAR INSTALLED
RELATED TO ORIGINAL COST AS OF DECEMBER 31, 2018

YEAR INST (1)	ORIGINAL COST (2)	ACCRUED DEPRECIATION (3)	AMOUNT		DEPRECIATED ORIGINAL COST CUMULATIVE AMOUNT (5)	PCT OF COL 4 TOTAL (6)
			(2)	(3)		
1893	33	33				0.0
1894	4,921	4,700		221	221	0.0
1895	1,687	894		793	1,014	0.0
1896	9,963	9,276		687	1,701	0.0
1897	574	303		271	1,972	0.0
1898	137	73		64	2,036	0.0
1899	1,339	705		634	2,670	0.0
1900	52,477	33,176	19,301		21,971	0.0
1901	10,858	5,687	5,171		27,142	0.0
1902	154	81	73		27,215	0.0
1903	83	43	40		27,255	0.0
1904	4	4			27,255	0.0
1905	598	310	288		27,543	0.0
1906	11,102	9,519	1,583		29,126	0.0
1907	7	7			29,126	0.0
1908	75,192	49,318	25,874		55,000	0.0
1909	75,351	54,593	20,758		75,758	0.0
1910	3,235	1,660	1,575		77,333	0.0
1911	348	179	169		77,502	0.0
1912	28,510	18,792	9,718		87,220	0.0
1913	882	451	431		87,651	0.0
1914	20,967	10,602	10,365		98,016	0.0
1915	2,265	1,147	1,118		99,134	0.0
1916	1,094	555	539		99,673	0.0
1917	752	480	272		99,945	0.0
1918	88	45	43		99,988	0.0
1919	812	408	404		100,392	0.0
1920	3,172	1,579	1,593		101,985	0.0
1921	12,722	11,380	1,342		103,327	0.0
1922	9,528	8,814	714		104,041	0.0
1923	7,934	6,338	1,596		105,637	0.0
1924	2,437	1,308	1,129		106,766	0.0
1925	9,211	5,269	3,942		110,708	0.0
1926	2,183	1,607	576		111,284	0.0
1927	60,949	45,570	15,379		126,663	0.0
1928	52,927	39,189	13,738		140,401	0.0
1929	28,459	22,733	5,726		146,127	0.1
1930	9,521	4,618	4,903		151,030	0.1
1931	4,449	2,715	1,734		152,764	0.1
1932	1,477	754	723		153,487	0.1
1933	15,013	12,780	2,233		155,720	0.1
1934	4,380	2,113	2,267		157,987	0.1
1935	6,519	3,457	3,062		161,049	0.1
1936	13,141	10,433	2,708		163,757	0.1
1937	13,938	7,697	6,241		169,998	0.1
1938	9,975	4,605	5,370		175,368	0.1

SUEZ WATER PENNSYLVANIA, INC.

CUMULATIVE DEPRECIATED ORIGINAL COST BY YEAR INSTALLED
RELATED TO ORIGINAL COST AS OF DECEMBER 31, 2018

YEAR INST (1)	ORIGINAL COST (2)	ACCRUED DEPRECIATION (3)	AMOUNT		DEPRECIATED ORIGINAL COST CUMULATIVE AMOUNT (5)	PCT OF COL 4 TOTAL (6)
			(2)	(3)		
			(4)			
1939	19,471	9,061	10,410		185,778	0.1
1940	10,046	6,831	3,215		188,993	0.1
1941	19,672	13,597	6,075		195,068	0.1
1942	13,778	6,409	7,369		202,437	0.1
1943	2,551	1,561	990		203,427	0.1
1944	10,278	5,295	4,983		208,410	0.1
1945	6,884	3,576	3,308		211,718	0.1
1946	23,888	12,172	11,716		223,434	0.1
1947	31,380	14,574	16,806		240,240	0.1
1948	64,668	32,772	31,896		272,136	0.1
1949	19,142	16,499	2,643		274,779	0.1
1950	36,234	21,553	14,681		289,460	0.1
1951	47,697	27,496	20,201		309,661	0.1
1952	59,274	27,710	31,564		341,225	0.1
1953	51,834	34,184	17,650		358,875	0.1
1954	14,122	8,327	5,795		364,670	0.1
1955	39,971	33,216	6,755		371,425	0.1
1956	77,108	44,436	32,672		404,097	0.1
1957	73,832	45,725	28,107		432,204	0.2
1958	202,675	132,759	69,916		502,120	0.2
1959	328,000	168,648	159,352		661,472	0.2
1960	362,633	168,985	193,648		855,120	0.3
1961	301,406	165,259	136,147		991,267	0.3
1962	187,352	105,939	81,413		1,072,680	0.4
1963	377,020	193,341	183,679		1,256,359	0.4
1964	788,207	414,104	374,103		1,630,462	0.6
1965	118,789	70,445	48,344		1,678,806	0.6
1966	355,515	170,152	185,363		1,864,169	0.7
1967	319,261	151,912	167,349		2,031,518	0.7
1968	245,677	104,714	140,963		2,172,481	0.8
1969	456,199	200,354	255,845		2,428,326	0.9
1970	709,020	298,238	410,782		2,839,108	1.0
1971	521,405	255,722	265,683		3,104,791	1.1
1972	539,446	232,604	306,842		3,411,633	1.2
1973	1,019,216	429,003	590,213		4,001,846	1.4
1974	762,371	368,971	393,400		4,395,246	1.5
1975	947,450	377,437	570,013		4,965,259	1.7
1976	846,897	506,789	340,108		5,305,367	1.9
1977	854,983	375,300	479,683		5,785,050	2.0
1978	1,609,102	632,743	976,359		6,761,409	2.4
1979	848,433	390,271	458,162		7,219,571	2.5
1980	1,372,927	757,093	615,834		7,835,405	2.8
1981	753,029	344,250	408,779		8,244,184	2.9
1982	1,198,565	555,339	643,226		8,887,410	3.1
1983	849,807	380,007	469,800		9,357,210	3.3
1984	1,877,518	935,234	942,284		10,299,494	3.6

SUEZ WATER PENNSYLVANIA, INC.

CUMULATIVE DEPRECIATED ORIGINAL COST BY YEAR INSTALLED
RELATED TO ORIGINAL COST AS OF DECEMBER 31, 2018

YEAR INST (1)	ORIGINAL COST (2)	ACCRUED DEPRECIATION (3)	AMOUNT		DEPRECIATED ORIGINAL COST CUMULATIVE AMOUNT (5)	PCT OF COL 4 TOTAL (6)
			(2)	(3)		
1985	2,924,553	1,193,422	1,731,131		12,030,625	4.2
1986	1,852,074	780,110	1,071,964		13,102,589	4.6
1987	3,921,428	1,218,319	2,703,109		15,805,698	5.6
1988	3,565,080	1,318,499	2,246,581		18,052,279	6.3
1989	3,226,561	1,063,871	2,162,690		20,214,969	7.1
1990	3,665,776	1,343,498	2,322,278		22,537,247	7.9
1991	4,108,773	1,570,735	2,538,038		25,075,285	8.8
1992	2,305,068	1,059,076	1,245,992		26,321,277	9.3
1993	8,952,167	4,875,064	4,077,103		30,398,380	10.7
1994	4,120,427	1,293,692	2,826,735		33,225,115	11.7
1995	2,875,882	801,944	2,073,938		35,299,053	12.4
1996	2,594,719	878,294	1,716,425		37,015,478	13.0
1997	5,985,457	1,481,624	4,503,833		41,519,311	14.6
1998	6,677,534	2,236,657	4,440,877		45,960,188	16.2
1999	7,066,325	2,614,327	4,451,998		50,412,186	17.7
2000	6,920,812	1,787,031	5,133,781		55,545,967	19.5
2001	5,994,487	1,618,885	4,375,602		59,921,569	21.1
2002	4,380,894	1,408,936	2,971,958		62,893,527	22.1
2003	7,205,886	1,627,257	5,578,629		68,472,156	24.1
2004	5,079,315	1,231,429	3,847,886		72,320,042	25.4
2005	14,451,880	5,843,892	8,607,988		80,928,030	28.4
2006	23,766,583	6,745,291	17,021,292		97,949,322	34.4
2007	7,396,940	1,588,404	5,808,536		103,757,858	36.5
2008	9,545,935	1,482,242	8,063,693		111,821,551	39.3
2009	10,166,538	2,102,939	8,063,599		119,885,150	42.1
2010	14,032,337	2,797,951	11,234,386		131,119,536	46.1
2011	15,001,934	5,143,485	9,858,449		140,977,985	49.5
2012	10,189,164	1,755,883	8,433,281		149,411,266	52.5
2013	7,778,888	1,745,423	6,033,465		155,444,731	54.6
2014	14,784,976	1,473,770	13,311,206		168,755,937	59.3
2015	14,964,705	1,540,922	13,423,783		182,179,720	64.0
2016	56,850,715	4,533,738	52,316,977		234,496,697	82.4
2017	22,985,274	559,818	22,425,456		256,922,153	90.3
2018	27,869,173	238,893	27,630,280		284,552,433	100.0
SUBTOTAL	363,154,359	78,601,930	284,552,429			
NONDEPRECIABLE PLANT	4,559,764	15,090	4,544,674			
TOTAL	367,714,123	78,617,020	289,097,103			

UTILITY PLANT IN SERVICE

SUEZ WATER PENNSYLVANIA, INC.

ACCOUNT 304.2 STRUCTURES AND IMPROVEMENTS - PUMPING

CALCULATED REMAINING LIFE DEPRECIATION ACCRUAL
RELATED TO ORIGINAL COST AS OF DECEMBER 31, 2018

YEAR (1)	ORIGINAL COST (2)	CALCULATED ACCRUED (3)	ALLOC. BOOK RESERVE (4)	FUTURE BOOK ACCRUALS (5)	REM. LIFE (6)	ANNUAL ACCRUAL (7)
SURVIVOR CURVE.. IOWA 55-R2						
NET SALVAGE PERCENT.. 0						
1894	3,945.76	3,946	3,946			
1896	3,234.56	3,235	3,235			
1900	11,559.50	11,560	11,560			
1906	7,805.01	7,805	7,805			
1908	15,400.56	15,401	15,401			
1921	4,500.02	4,432	3,765	735	1.50	490
1923	6,690.03	6,580	5,590	1,100	1.59	692
1925	985.10	958	814	171	2.65	65
1926	99.78	97	82	18	2.74	7
1927	5,482.36	5,317	4,517	965	2.84	340
1928	31,464.31	30,470	25,885	5,579	2.95	1,891
1931	209.40	200	170	39	4.24	9
1933	42.67	40	34	9	4.59	2
1937	465.00	436	370	95	5.46	17
1940	1,872.03	1,734	1,473	399	6.25	64
1941	63.00	58	49	14	6.54	2
1944	227.13	206	175	52	7.47	7
1945	1,737.25	1,570	1,334	403	7.80	52
1946	427.37	384	326	101	8.15	12
1950	2,980.08	2,633	2,237	743	9.02	82
1952	790.89	689	585	206	9.83	21
1954	215.60	186	158	58	10.13	6
1956	153.69	131	111	43	11.03	4
1957	562.26	474	403	159	11.49	14
1958	632.11	528	449	183	11.96	15
1959	2,082.89	1,735	1,474	609	11.93	51
1960	154.19	127	108	46	12.43	4
1961	1,591.08	1,299	1,104	487	12.92	38
1962	330.20	267	227	103	13.43	8
1964	9,917.48	7,891	6,704	3,213	13.99	230
1965	897.47	706	600	297	14.53	20
1966	5,872.32	4,563	3,876	1,996	15.07	132
1967	7,245.30	5,597	4,755	2,490	15.17	164
1969	6,923.75	5,209	4,425	2,499	16.29	153
1970	5,863.00	4,379	3,720	2,143	16.44	130
1971	821.00	604	513	308	17.02	18
1972	13,906.43	10,088	8,570	5,336	17.60	303
1973	11,539.20	8,244	7,003	4,536	18.19	249
1974	15,029.15	10,635	9,035	5,994	18.39	326
1975	2,184.81	1,521	1,292	893	19.00	47
1976	48,715.62	33,331	28,315	20,401	19.61	1,040
1977	73.00	49	42	31	19.85	2
1978	270.98	180	153	118	20.48	6

SUEZ WATER PENNSYLVANIA, INC.

ACCOUNT 304.2 STRUCTURES AND IMPROVEMENTS - PUMPING

CALCULATED REMAINING LIFE DEPRECIATION ACCRUAL
RELATED TO ORIGINAL COST AS OF DECEMBER 31, 2018

YEAR (1)	ORIGINAL COST (2)	CALCULATED ACCRUED (3)	ALLOC. BOOK RESERVE (4)	FUTURE BOOK ACCRUALS (5)	REM. LIFE (6)	ANNUAL ACCRUAL (7)
SURVIVOR CURVE.. IOWA 55-R2						
NET SALVAGE PERCENT.. 0						
1980	12,728.00	8,184	6,952	5,776	21.38	270
1981	7,412.46	4,670	3,967	3,445	22.02	156
1982	11,911.46	7,347	6,241	5,670	22.67	250
1983	11,775.00	7,147	6,072	5,703	22.98	248
1984	53,133.53	31,529	26,785	26,349	23.64	1,115
1985	1,587.00	920	782	805	24.30	33
1986	80,828.07	45,975	39,057	41,771	24.64	1,695
1987	7,692.00	4,264	3,622	4,070	25.32	161
1988	138,137.20	74,995	63,710	74,427	25.68	2,898
1989	21,942.61	11,586	9,843	12,100	26.37	459
1990	98,108.21	50,604	42,989	55,119	26.75	2,061
1991	1,959.00	980	833	1,126	27.45	41
1993	4,122.00	1,945	1,652	2,470	28.55	87
1994	10,160.00	4,655	3,955	6,205	28.97	214
1995	9,166.00	4,050	3,441	5,725	29.69	193
1996	45,516.00	19,458	16,530	28,986	30.13	962
1997	117,264.11	48,149	40,903	76,361	30.86	2,474
1998	732,013.46	289,585	246,007	486,006	31.32	15,517
2000	5,600.51	2,031	1,725	3,876	32.52	119
2001	7,922.63	2,745	2,332	5,591	33.01	169
2002	5,476.93	1,807	1,535	3,942	33.50	118
2005	5,382.54	1,497	1,272	4,111	35.04	117
2006	9,957.35	2,589	2,199	7,758	35.58	218
2007	24,533.69	5,925	5,033	19,501	36.12	540
2008	6,444.17	1,434	1,218	5,226	36.67	143
2009	535,672.72	109,384	92,924	442,749	37.01	11,963
2010	301,293.94	55,559	47,199	254,095	37.59	6,760
2011	55,664.60	9,185	7,803	47,862	37.95	1,261
2012	46,287.20	6,712	5,702	40,585	38.34	1,059
2013	512,705.75	63,986	54,357	458,349	38.56	11,887
2014	6,440.40	670	569	5,871	38.79	151
2015	223,611.96	18,470	15,691	207,921	38.87	5,349
2016	315,350.74	19,079	16,208	299,143	38.82	7,706
2017	58,313.57	2,204	1,872	56,442	38.18	1,478
	3,721,078.15	1,114,815	953,370	2,767,708		84,585

COMPOSITE REMAINING LIFE AND ANNUAL ACCRUAL RATE, PERCENT .. 32.7 2.27

SUEZ WATER PENNSYLVANIA, INC.

ACCOUNT 304.3 STRUCTURES AND IMPROVEMENTS - WATER TREATMENT PLANT

CALCULATED REMAINING LIFE DEPRECIATION ACCRUAL
RELATED TO ORIGINAL COST AS OF DECEMBER 31, 2018

YEAR (1)	ORIGINAL COST (2)	CALCULATED ACCRUED (3)	ALLOC. BOOK RESERVE (4)	FUTURE BOOK ACCRUALS (5)	REM. LIFE (6)	ANNUAL ACCRUAL (7)
BLOOMSBURG TREATMENT PLANT						
INTERIM SURVIVOR CURVE.. IOWA 55-S1.5						
PROBABLE RETIREMENT YEAR.. 6-2028						
NET SALVAGE PERCENT.. 0						
1912	11,253.12	11,145	9,999	1,254	1.03	1,217
1941	390.74	363	326	65	5.83	11
1951	342.13	309	277	65	7.13	9
1956	76.86	69	62	15	7.43	2
1960	1,437.59	1,278	1,147	291	7.29	40
1962	267.74	236	212	56	7.60	7
1966	43.33	38	34	9	7.74	1
1971	9.54	8	7	2	8.06	
1972	95.68	81	73	23	8.14	3
1974	1,353.61	1,144	1,026	327	8.13	40
1976	1,354.32	1,134	1,017	337	8.26	41
1980	1,422.00	1,166	1,046	376	8.45	44
1982	761.47	617	554	208	8.55	24
1986	5,678.99	4,485	4,024	1,655	8.65	191
1988	34,666.00	26,963	24,191	10,475	8.71	1,203
1990	886.17	677	607	279	8.81	32
1992	5,966.23	4,459	4,001	1,966	8.96	219
1995	4,590.00	3,311	2,971	1,619	9.07	179
1996	3,296.00	2,351	2,109	1,187	9.05	131
1998	1,004.20	696	624	380	9.09	42
1999	11,767.95	8,009	7,185	4,582	9.15	501
2001	2,646.12	1,736	1,557	1,089	9.17	119
2002	39,601.77	25,416	22,803	16,799	9.21	1,824
2003	8,759.49	5,485	4,921	3,838	9.25	415
2004	3,380.35	2,063	1,851	1,529	9.25	165
2005	40,329.46	23,899	21,442	18,888	9.28	2,035
	181,380.86	127,138	114,065	67,316		8,495

BLOOMSBURG TREATMENT PLANT - NEW
INTERIM SURVIVOR CURVE.. IOWA 55-S1.5
PROBABLE RETIREMENT YEAR.. 6-2076
NET SALVAGE PERCENT.. 0

2016	5,829,778.36	335,212	300,745	5,529,033	40.98	134,920
	5,829,778.36	335,212	300,745	5,529,033		134,920

SUEZ WATER PENNSYLVANIA, INC.

ACCOUNT 304.3 STRUCTURES AND IMPROVEMENTS - WATER TREATMENT PLANT

CALCULATED REMAINING LIFE DEPRECIATION ACCRUAL
RELATED TO ORIGINAL COST AS OF DECEMBER 31, 2018

YEAR (1)	ORIGINAL COST (2)	CALCULATED ACCRUED (3)	ALLOC. BOOK RESERVE (4)	FUTURE BOOK ACCRUALS (5)	REM. LIFE (6)	ANNUAL ACCRUAL (7)
SIXTH STREET PLANT						
INTERIM SURVIVOR CURVE.. IOWA 55-S1.5						
PROBABLE RETIREMENT YEAR.. 6-2045						
NET SALVAGE PERCENT.. 0						
1964	44,792.41	35,888	32,198	12,595	13.52	932
1980	34,687.00	23,906	21,448	13,239	17.36	763
1984	102,973.00	67,138	60,235	42,738	18.41	2,321
1985	97,842.00	62,932	56,461	41,381	18.58	2,227
1986	35,320.00	22,386	20,084	15,236	18.78	811
1988	43,707.00	26,792	24,037	19,670	19.25	1,022
1989	18,985.00	11,425	10,250	8,735	19.52	447
1993	763,622.37	424,498	380,850	382,772	20.37	18,791
1995	4,309.00	2,279	2,045	2,264	20.94	108
1997	2,832.04	1,419	1,273	1,559	21.42	73
2000	12,075.79	5,519	4,952	7,124	21.98	324
2001	19,652.67	8,631	7,744	11,909	22.34	533
2002	20,860.96	8,812	7,906	12,955	22.56	574
2003	24,257.33	9,851	8,838	15,419	22.67	680
2004	24,519.48	9,494	8,518	16,002	22.95	697
2005	2,782,262.44	1,025,542	920,093	1,862,169	23.13	80,509
2006	58,487.29	20,400	18,302	40,185	23.34	1,722
2009	511.46	145	130	381	23.95	16
2010	3,237.38	845	758	2,479	24.07	103
2011	32,438.90	7,639	6,854	25,585	24.35	1,051
2015	28,996.45	3,561	3,195	25,802	24.99	1,032
2016	3,656.81	331	297	3,360	25.12	134
	4,160,026.78	1,779,433	1,596,467	2,563,560		114,870

RICHARD C. RABOLD PLANT
INTERIM SURVIVOR CURVE.. IOWA 55-S1.5
PROBABLE RETIREMENT YEAR.. 6-2043
NET SALVAGE PERCENT.. 0

1991	17,824.37	10,538	9,454	8,370	19.01	440
1993	1,569,369.50	888,420	797,071	772,299	19.55	39,504
1995	1,996.00	1,083	972	1,024	19.79	52
2003	7,686.63	3,228	2,896	4,791	21.40	224
2010	2,848.74	777	697	2,152	22.65	95
2011	2,940.92	728	653	2,288	22.80	100
2012	15,515.08	3,429	3,076	12,439	22.91	543
2013	1,000.00	192	172	828	23.07	36
	1,619,181.24	908,395	814,992	804,189		40,994

SUEZ WATER PENNSYLVANIA, INC.

ACCOUNT 304.3 STRUCTURES AND IMPROVEMENTS - WATER TREATMENT PLANT

CALCULATED REMAINING LIFE DEPRECIATION ACCRUAL
RELATED TO ORIGINAL COST AS OF DECEMBER 31, 2018

YEAR (1)	ORIGINAL COST (2)	CALCULATED ACCRUED (3)	ALLOC. BOOK RESERVE (4)	FUTURE BOOK ACCRUALS (5)	REM. LIFE (6)	ANNUAL ACCRUAL (7)
MARKET STREET PLANT						
INTERIM SURVIVOR CURVE.. IOWA 55-S1.5						
PROBABLE RETIREMENT YEAR.. 6-2024						
NET SALVAGE PERCENT.. 0						
1964	51,971.42	47,585	42,692	9,279	5.02	1,848
1965	9,550.56	8,737	7,839	1,712	4.98	344
1966	139.02	127	114	25	4.97	5
1986	8,998.00	7,749	6,952	2,046	5.24	390
1987	5,535.00	4,742	4,254	1,281	5.26	244
1988	4,826.00	4,107	3,685	1,141	5.34	214
1989	767.00	649	582	185	5.34	35
1999	6,698.01	5,251	4,711	1,987	5.38	369
2001	6,510.83	4,968	4,457	2,054	5.44	378
2002	3,118.36	2,346	2,105	1,014	5.43	187
2003	715.28	530	476	240	5.42	44
2014	2,530.24	1,140	1,023	1,507	5.49	274
	101,359.72	87,931	78,890	22,470		4,332

OLD HUMMELSTOWN PLANT
FULLY ACCRUED

1908	1,309.27	1,309	1,309			
1983	6,302.00	6,302	6,302			
1984	21,523.00	21,523	21,523			
1987	5,452.00	5,452	5,452			
1991	3,358.00	3,358	3,358			
1995	8,553.00	8,553	8,553			
1999	13,270.24	13,270	13,270			
2000	3,407.62	3,408	3,408			
2001	16,389.60	16,390	16,390			
2003	7,018.97	7,019	7,019			
	86,583.70	86,584	86,584			

SUEZ WATER PENNSYLVANIA, INC.

ACCOUNT 304.3 STRUCTURES AND IMPROVEMENTS - WATER TREATMENT PLANT

CALCULATED REMAINING LIFE DEPRECIATION ACCRUAL
RELATED TO ORIGINAL COST AS OF DECEMBER 31, 2018

YEAR (1)	ORIGINAL COST (2)	CALCULATED ACCRUED (3)	ALLOC. BOOK RESERVE (4)	FUTURE BOOK ACCRUALS (5)	REM. LIFE (6)	ANNUAL ACCRUAL (7)
HUMMELSTOWN MEMBRANE PLANT						
INTERIM SURVIVOR CURVE.. IOWA 55-S1.5						
PROBABLE RETIREMENT YEAR.. 6-2061						
NET SALVAGE PERCENT.. 0						
2006	4,400,180.64	1,259,332	1,123,647	3,276,533	31.17	105,118
2010	6,116.39	1,253	1,118	4,998	33.00	151
2015	4,248.57	384	343	3,906	35.26	111
	4,410,545.60	1,260,969	1,125,108	3,285,438		105,380
OTHER TREATMENT FACILITIES						
SURVIVOR CURVE.. IOWA 50-R3						
NET SALVAGE PERCENT.. 0						
1975	663.64	517	461	202	12.37	16
1985	915.00	592	528	387	18.31	21
1986	2,724.00	1,726	1,540	1,184	18.78	63
1987	8,242.00	5,089	4,541	3,701	19.52	190
1988	8,453.00	5,079	4,532	3,921	20.26	194
1991	12,418.00	6,865	6,125	6,293	22.25	283
1996	4,244.00	1,986	1,772	2,472	25.58	97
1998	201,852.42	86,897	77,534	124,318	27.12	4,584
2001	25,996.41	9,691	8,647	17,350	29.45	589
2002	7,025.86	2,481	2,214	4,812	30.23	159
2004	82,833.24	25,943	23,148	59,685	31.80	1,877
2005	12,090.80	3,558	3,175	8,916	32.37	275
2006	451,572.47	123,641	110,319	341,253	33.16	10,291
2007	123,642.36	31,282	27,912	95,731	33.95	2,820
2008	36,199.17	8,398	7,493	28,706	34.75	826
2009	9,741.31	2,054	1,833	7,909	35.55	222
2010	691,275.39	131,066	116,944	574,331	36.34	15,804
2011	80,358.65	13,500	12,045	68,313	37.14	1,839
2012	16,410.88	2,399	2,141	14,270	37.95	376
2013	131,072.79	16,292	14,537	116,536	38.75	3,007
2014	12,170.26	1,244	1,110	11,060	39.55	280
2015	38,004.49	3,033	2,706	35,298	40.36	875

SUEZ WATER PENNSYLVANIA, INC.

ACCOUNT 304.3 STRUCTURES AND IMPROVEMENTS - WATER TREATMENT PLANT

CALCULATED REMAINING LIFE DEPRECIATION ACCRUAL
RELATED TO ORIGINAL COST AS OF DECEMBER 31, 2018

YEAR (1)	ORIGINAL COST (2)	CALCULATED ACCRUED (3)	ALLOC. BOOK RESERVE (4)	FUTURE BOOK ACCRUALS (5)	REM. LIFE (6)	ANNUAL ACCRUAL (7)
OTHER TREATMENT FACILITIES						
SURVIVOR CURVE.. IOWA 50-R3						
NET SALVAGE PERCENT.. 0						
2016	1,128,592.39	64,894	57,902	1,070,690	40.98	26,127
2017	1,075.95	37	33	1,043	41.60	25
2018	5,625.59	66	59	5,567	41.87	133
	3,093,200.07	548,330	489,251	2,603,949		70,973
	19,482,056.33	5,133,992	4,606,102	14,875,955		479,964
COMPOSITE REMAINING LIFE AND ANNUAL ACCRUAL RATE, PERCENT ..						31.0 2.46

SUEZ WATER PENNSYLVANIA, INC.

ACCOUNT 304.4 STRUCTURES AND IMPROVEMENTS - TRANSMISSION AND DISTRIBUTION

CALCULATED REMAINING LIFE DEPRECIATION ACCRUAL
RELATED TO ORIGINAL COST AS OF DECEMBER 31, 2018

YEAR (1)	ORIGINAL COST (2)	CALCULATED ACCRUED (3)	ALLOC. BOOK RESERVE (4)	FUTURE BOOK ACCRUALS (5)	REM. LIFE (6)	ANNUAL ACCRUAL (7)
SURVIVOR CURVE.. IOWA 40-R3						
NET SALVAGE PERCENT.. 0						
2006	8,163.53	2,745	2,065	6,099	24.68	247
2008	3,449.20	985	741	2,708	26.26	103
2009	29,035.00	7,558	5,685	23,350	27.00	865
2010	199.00	47	35	164	27.73	6
2012	2,576.00	467	351	2,225	29.34	76
2013	3,465.00	534	402	3,063	30.21	101
2014	551.22	70	53	498	30.96	16
2016	6,801.65	486	366	6,436	32.47	198
2017	228,722.46	9,927	7,466	221,256	33.10	6,684
2018	136,308.05	2,017	1,517	134,791	33.40	4,036
	419,271.11	24,836	18,681	400,590		12,332

COMPOSITE REMAINING LIFE AND ANNUAL ACCRUAL RATE, PERCENT .. 32.5 2.94

SUEZ WATER PENNSYLVANIA, INC.

ACCOUNT 304.51 STRUCTURES AND IMPROVEMENTS - OFFICES

CALCULATED REMAINING LIFE DEPRECIATION ACCRUAL
RELATED TO ORIGINAL COST AS OF DECEMBER 31, 2018

YEAR (1)	ORIGINAL COST (2)	CALCULATED ACCRUED (3)	ALLOC. BOOK RESERVE (4)	FUTURE BOOK ACCRUALS (5)	REM. LIFE (6)	ANNUAL ACCRUAL (7)
BLOOMSBURG TREATMENT PLANT - NEW						
INTERIM SURVIVOR CURVE.. IOWA 55-S1.5						
PROBABLE RETIREMENT YEAR.. 6-2076						
NET SALVAGE PERCENT.. 0						
2016	8,862,454.27	509,591	470,593	8,391,861	40.98	204,779
2018	171,017.94	1,984	1,832	169,186	42.42	3,988
	9,033,472.21	511,575	472,425	8,561,047		208,767
OTHER OFFICES						
SURVIVOR CURVE.. IOWA 45-R2.5						
NET SALVAGE PERCENT.. 0						
1975	469.53	378	349	120	10.55	11
1976	230.89	184	170	61	10.97	6
1981	469.79	347	320	149	13.26	11
1985	146,967.79	100,937	93,213	53,755	15.28	3,518
1986	2,806.42	1,879	1,735	1,071	16.04	67
1987	2,588.25	1,696	1,566	1,022	16.58	62
1990	34,674.66	21,148	19,530	15,145	18.23	831
1991	2,921.64	1,735	1,602	1,319	18.80	70
1993	1,307.08	730	674	633	20.16	31
1995	2,287.02	1,198	1,106	1,181	21.35	55
1996	19,972.36	10,110	9,336	10,636	21.95	485
1997	14,714.09	7,180	6,631	8,084	22.56	358
1998	5,281.03	2,479	2,289	2,992	23.17	129
1999	108,010.81	48,443	44,736	63,275	23.98	2,639
2000	2,639.85	1,133	1,046	1,594	24.60	65
2001	2,993.91	1,226	1,132	1,862	25.24	74
2004	4,900.14	1,705	1,575	3,326	27.17	122
2005	2,709.61	885	817	1,892	27.82	68
2006	6,429.16	1,961	1,811	4,618	28.48	162
2007	27,660.22	7,825	7,226	20,434	29.15	701
2008	5,347.32	1,392	1,285	4,062	29.82	136
2009	5,779.35	1,378	1,273	4,507	30.34	149
2011	5,993.25	1,146	1,058	4,935	31.72	156
2012	13,783.09	2,311	2,134	11,649	32.26	361
2013	18,044.01	2,591	2,393	15,651	32.81	477
2014	20,394.10	2,423	2,238	18,157	33.38	544

SUEZ WATER PENNSYLVANIA, INC.

ACCOUNT 304.51 STRUCTURES AND IMPROVEMENTS - OFFICES

CALCULATED REMAINING LIFE DEPRECIATION ACCRUAL
RELATED TO ORIGINAL COST AS OF DECEMBER 31, 2018

YEAR (1)	ORIGINAL COST (2)	CALCULATED ACCRUED (3)	ALLOC. BOOK RESERVE (4)	FUTURE BOOK ACCRUALS (5)	REM. LIFE (6)	ANNUAL ACCRUAL (7)
OTHER OFFICES						
SURVIVOR CURVE.. IOWA 45-R2.5						
NET SALVAGE PERCENT.. 0						
2015	46,800.48	4,390	4,054	42,746	33.81	1,264
2017	376,412.53	15,809	14,599	361,813	34.21	10,576
2018	18,001.89	266	246	17,756	33.17	535
	900,590.27	244,885	226,145	674,445		23,663
	9,934,062.48	756,460	698,570	9,235,492		232,430
COMPOSITE REMAINING LIFE AND ANNUAL ACCRUAL RATE, PERCENT ..					39.7	2.34

SUEZ WATER PENNSYLVANIA, INC.

ACCOUNT 304.52 STRUCTURES AND IMPROVEMENTS - STORES, SHOP AND GARAGE

CALCULATED REMAINING LIFE DEPRECIATION ACCRUAL
RELATED TO ORIGINAL COST AS OF DECEMBER 31, 2018

YEAR (1)	ORIGINAL COST (2)	CALCULATED ACCRUED (3)	ALLOC. BOOK RESERVE (4)	FUTURE BOOK ACCRUALS (5)	REM. LIFE (6)	ANNUAL ACCRUAL (7)
SUMMIT VIEW MAINTENANCE BUILDING						
INTERIM SURVIVOR CURVE.. IOWA 60-S0.5						
PROBABLE RETIREMENT YEAR.. 6-2043						
NET SALVAGE PERCENT.. 0						
2003	1,349,663.01	573,202	504,387	845,276	21.00	40,251
2018	27,002.82	597	525	26,477	22.12	1,197
	1,376,665.83	573,799	504,912	871,754		41,448
OTHER MAINTENANCE BUILDINGS						
SURVIVOR CURVE.. IOWA 35-S2.5						
NET SALVAGE PERCENT.. 0						
1935	133.21	133	133			
1941	2,167.02	2,167	2,167			
1942	67.40	67	67			
1944	385.22	385	385			
1946	1,459.43	1,459	1,459			
1947	887.61	888	888			
1951	551.04	550	481	70	0.07	70
1961	1,549.96	1,488	1,302	248	2.38	104
1965	75.45	71	62	13	2.99	4
1971	12,749.13	11,748	10,276	2,473	4.05	611
1975	438.78	395	346	93	4.81	19
1982	1,334.98	1,126	985	350	6.79	52
1983	23,116.44	19,284	16,868	6,248	7.06	885
1984	3,152.79	2,600	2,274	879	7.34	120
1985	23,717.72	19,306	16,887	6,830	7.65	893
1986	177.31	142	124	53	7.98	7
1991	14,423.58	10,551	9,229	5,194	10.09	515
1993	37,507.02	26,206	22,923	14,584	11.00	1,326
1995	1,672.23	1,104	966	707	12.09	58
1996	1,868.68	1,194	1,044	824	12.71	65
1999	11,807.84	6,769	5,921	5,887	14.51	406
2007	25,575.85	9,146	8,000	17,576	20.66	851
2008	1,742.84	571	499	1,243	21.55	58

SUEZ WATER PENNSYLVANIA, INC.

ACCOUNT 304.52 STRUCTURES AND IMPROVEMENTS - STORES, SHOP AND GARAGE

CALCULATED REMAINING LIFE DEPRECIATION ACCRUAL
RELATED TO ORIGINAL COST AS OF DECEMBER 31, 2018

YEAR (1)	ORIGINAL COST (2)	CALCULATED ACCRUED (3)	ALLOC. BOOK RESERVE (4)	FUTURE BOOK ACCRUALS (5)	REM. LIFE (6)	ANNUAL ACCRUAL (7)
OTHER MAINTENANCE BUILDINGS						
SURVIVOR CURVE.. IOWA 35-S2.5						
NET SALVAGE PERCENT.. 0						
2010	2,937.75	784	686	2,252	23.35	96
2012	15,035.85	3,079	2,693	12,343	25.24	489
2018	81,008.49	1,280	1,120	79,889	31.24	2,557
	265,543.62	122,493	107,787	157,757		9,186
	1,642,209.45	696,292	612,699	1,029,511		50,634
COMPOSITE REMAINING LIFE AND ANNUAL ACCRUAL RATE, PERCENT					20.3	3.08

SUEZ WATER PENNSYLVANIA, INC.

ACCOUNT 304.53 STRUCTURES AND IMPROVEMENTS - MISCELLANEOUS

CALCULATED REMAINING LIFE DEPRECIATION ACCRUAL
RELATED TO ORIGINAL COST AS OF DECEMBER 31, 2018

YEAR (1)	ORIGINAL COST (2)	CALCULATED ACCRUED (3)	ALLOC. BOOK RESERVE (4)	FUTURE BOOK ACCRUALS (5)	REM. LIFE (6)	ANNUAL ACCRUAL (7)
SURVIVOR CURVE.. IOWA 25-S2						
NET SALVAGE PERCENT.. 0						
1993	9,285.72	7,625	6,830	2,456	5.56	442
1997	70,325.81	53,068	47,535	22,791	6.99	3,261
1998	667.79	491	440	228	7.35	31
2000	1,694.76	1,173	1,051	644	8.24	78
2001	103,939.09	69,483	62,238	41,701	8.68	4,804
2002	36,719.44	23,629	21,165	15,554	9.14	1,702
2008	18,774.11	8,497	7,611	11,163	12.70	879
2010	40,477.51	15,171	13,589	26,889	14.18	1,896
2011	21,295.35	7,108	6,367	14,928	14.97	997
2012	15,916.86	4,635	4,152	11,765	15.82	744
2013	3,729.45	923	827	2,902	16.72	174
2014	21,412.68	4,355	3,900	17,513	17.62	994
2018	6,750.70	153	137	6,614	21.53	307
	350,989.27	196,311	175,842	175,147		16,309

COMPOSITE REMAINING LIFE AND ANNUAL ACCRUAL RATE, PERCENT .. 10.7 4.65

SUEZ WATER PENNSYLVANIA, INC.

ACCOUNT 305 COLLECTING AND IMPOUNDING RESERVOIRS

CALCULATED REMAINING LIFE DEPRECIATION ACCRUAL
RELATED TO ORIGINAL COST AS OF DECEMBER 31, 2018

YEAR (1)	ORIGINAL COST (2)	CALCULATED ACCRUED (3)	ALLOC. BOOK RESERVE (4)	FUTURE BOOK ACCRUALS (5)	REM. LIFE (6)	ANNUAL ACCRUAL (7)
SURVIVOR CURVE.. IOWA 65-S1						
NET SALVAGE PERCENT.. 0						
1896	6,209.00	6,085	5,764	445	2.50	178
1909	27,130.00	25,844	24,482	2,648	5.45	486
1927	38,379.41	34,415	32,601	5,778	10.54	548
1928	4,136.58	3,706	3,511	626	10.51	60
1958	854.62	641	607	248	20.15	12
1982	8,214.00	4,557	4,317	3,897	29.29	133
1983	2,858.00	1,562	1,480	1,378	29.44	47
1985	21,211.00	11,085	10,501	10,710	30.60	350
1986	1,583.00	813	770	813	30.79	26
1992	7,752.00	3,410	3,230	4,522	33.74	134
2010	1.00			1	44.13	
2015	316,303.78	21,572	20,435	295,869	47.78	6,192
	434,632.39	113,690	107,698	326,934		8,166
COMPOSITE REMAINING LIFE AND ANNUAL ACCRUAL RATE, PERCENT ..						40.0 1.88

SUEZ WATER PENNSYLVANIA, INC.

ACCOUNT 306 LAKE, RIVER AND OTHER INTAKES

CALCULATED REMAINING LIFE DEPRECIATION ACCRUAL
RELATED TO ORIGINAL COST AS OF DECEMBER 31, 2018

YEAR (1)	ORIGINAL COST (2)	CALCULATED ACCRUED (3)	ALLOC. BOOK RESERVE (4)	FUTURE BOOK ACCRUALS (5)	REM. LIFE (6)	ANNUAL ACCRUAL (7)
ROCKVILLE INTAKE						
INTERIM SURVIVOR CURVE.. IOWA 65-R2.5						
PROBABLE RETIREMENT YEAR.. 6-2046						
NET SALVAGE PERCENT.. 0						
1970	89,317.00	64,112	60,897	28,420	19.07	1,490
1971	736.00	524	498	238	19.17	12
1982	7,705.52	4,781	4,541	3,164	22.32	142
1985	170,185.00	101,481	96,392	73,793	22.68	3,254
1987	3,952.00	2,278	2,164	1,788	23.15	77
1991	393,848.00	211,181	200,590	193,258	23.78	8,127
1992	87,620.00	45,974	43,668	43,952	24.01	1,831
1997	96,018.42	44,802	42,555	53,463	24.58	2,175
1998	11,870.75	5,377	5,107	6,763	24.75	273
1999	635,472.94	280,053	266,008	369,465	24.75	14,928
2010	5,666.03	1,411	1,340	4,326	25.63	169
2011	12,963.41	2,936	2,789	10,175	25.61	397
2012	2,944.15	595	565	2,379	25.65	93
2013	1,628.05	288	274	1,354	25.65	53
	1,519,927.27	765,793	727,387	792,540		33,021

HUMMELSTOWN INTAKE
INTERIM SURVIVOR CURVE.. IOWA 65-R2.5
PROBABLE RETIREMENT YEAR.. 6-2061
NET SALVAGE PERCENT.. 0

2006	1,335,191.80	347,150	329,740	1,005,452	35.58	28,259
	1,335,191.80	347,150	329,740	1,005,452		28,259

OTHER INTAKES
SURVIVOR CURVE.. IOWA 50-S1
NET SALVAGE PERCENT.. 0

1909	1,166.49	1,166	1,166			
1928	1,872.20	1,830	1,737	135	2.09	65
1933	4,581.51	4,387	4,164	418	3.79	110
1959	38,851.76	32,597	30,940	7,912	11.42	693
1960	638.58	534	507	132	11.43	12
1962	65.57	54	51	14	12.47	1
1965	256.72	206	196	61	13.17	5
1973	1,216.00	902	856	360	15.85	23
1993	6,945.00	3,613	3,429	3,516	23.52	149
1996	1,668.00	792	752	916	24.89	37

SUEZ WATER PENNSYLVANIA, INC.

ACCOUNT 306 LAKE, RIVER AND OTHER INTAKES

CALCULATED REMAINING LIFE DEPRECIATION ACCRUAL
RELATED TO ORIGINAL COST AS OF DECEMBER 31, 2018

YEAR (1)	ORIGINAL COST (2)	CALCULATED ACCRUED (3)	ALLOC. BOOK RESERVE (4)	FUTURE BOOK ACCRUALS (5)	REM. LIFE (6)	ANNUAL ACCRUAL (7)
OTHER INTAKES						
SURVIVOR CURVE.. IOWA 50-S1						
NET SALVAGE PERCENT.. 0						
2002	9,792.71	3,652	3,466	6,326	27.75	228
2004	5,234.37	1,746	1,657	3,577	28.98	123
2006	21,794.95	6,403	6,078	15,717	30.05	523
2007	4,878.99	1,330	1,262	3,617	30.69	118
2008	3,712.03	935	887	2,825	31.17	91
2010	2,209.36	458	435	1,775	32.48	55
2013	2,374.00	325	308	2,066	34.66	60
2014	6,048.30	683	648	5,400	35.34	153
2016	396,417.99	25,054	23,780	372,638	37.03	10,063
	509,724.53	86,667	82,321	427,404		12,509
	3,364,843.60	1,199,610	1,139,448	2,225,396		73,789
COMPOSITE REMAINING LIFE AND ANNUAL ACCRUAL RATE, PERCENT ..						30.2 2.19

SUEZ WATER PENNSYLVANIA, INC.

ACCOUNT 307 WELLS AND SPRINGS

CALCULATED REMAINING LIFE DEPRECIATION ACCRUAL
RELATED TO ORIGINAL COST AS OF DECEMBER 31, 2018

YEAR (1)	ORIGINAL COST (2)	CALCULATED ACCRUED (3)	ALLOC. BOOK RESERVE (4)	FUTURE BOOK ACCRUALS (5)	REM. LIFE (6)	ANNUAL ACCRUAL (7)
SURVIVOR CURVE.. IOWA 48-R2						
NET SALVAGE PERCENT.. 0						
1937	2,072.00	2,026	2,072			
1946	1,003.00	945	1,003			
1952	3,832.61	3,517	3,833			
1954	3,296.32	2,998	3,296			
1955	225.00	203	225			
1963	3,667.08	3,134	3,667			
1966	7,300.26	6,094	7,300			
1970	1,574.00	1,267	1,574			
1972	752.69	591	745	8	12.67	1
1973	628.00	489	616	12	12.98	1
1977	3,894.00	2,861	3,607	287	14.99	19
1978	3,982.00	2,887	3,640	342	15.36	22
1982	2,708.00	1,838	2,317	391	17.26	23
1984	9,408.64	6,134	7,733	1,676	18.41	91
1985	3,793.00	2,427	3,060	733	18.86	39
1986	46,736.65	29,313	36,954	9,783	19.32	506
1987	26,451.00	16,246	20,481	5,970	19.78	302
1988	37,690.38	22,644	28,546	9,144	20.26	451
1989	36,964.00	21,591	27,219	9,745	21.01	464
1991	49,043.00	27,243	34,344	14,699	22.00	668
1992	4,135.00	2,235	2,818	1,317	22.52	58
1993	71,429.66	37,522	47,303	24,127	23.04	1,047
1994	110,452.00	56,286	70,958	39,494	23.58	1,675
1995	19,745.00	9,744	12,284	7,461	24.12	309
1997	3,715.04	1,701	2,144	1,571	25.45	62
1998	51,372.00	22,748	28,677	22,695	25.80	880
2000	16,796.00	6,836	8,618	8,178	26.95	303
2001	34,771.24	13,509	17,030	17,741	27.55	644
2004	101,589.10	33,728	42,520	59,069	29.17	2,025
2005	105,076.05	32,763	41,303	63,773	29.79	2,141
2006	36,935.28	10,804	13,620	23,315	30.24	771
2007	11,613.99	3,152	3,974	7,640	30.87	247
2008	7,462.99	1,873	2,361	5,102	31.34	163
2009	4,059.00	933	1,176	2,883	31.82	91
2010	67,794.29	14,115	17,794	50,000	32.32	1,547
2011	5,963.00	1,114	1,404	4,559	32.66	140
2012	1,879.00	308	388	1,491	33.18	45

SUEZ WATER PENNSYLVANIA, INC.

ACCOUNT 307 WELLS AND SPRINGS

CALCULATED REMAINING LIFE DEPRECIATION ACCRUAL
RELATED TO ORIGINAL COST AS OF DECEMBER 31, 2018

YEAR (1)	ORIGINAL COST (2)	CALCULATED ACCRUED (3)	ALLOC. BOOK RESERVE (4)	FUTURE BOOK ACCRUALS (5)	REM. LIFE (6)	ANNUAL ACCRUAL (7)
SURVIVOR CURVE.. IOWA 48-R2						
NET SALVAGE PERCENT.. 0						
2013	8,751.00	1,232	1,553	7,198	33.56	214
2014	89,646.19	10,524	13,268	76,378	33.82	2,258
2017	29,834.35	1,280	1,614	28,220	33.47	843
	1,028,041.81	416,855	523,039	505,003		18,050

COMPOSITE REMAINING LIFE AND ANNUAL ACCRUAL RATE, PERCENT .. 28.0 . 1.76

SUEZ WATER PENNSYLVANIA, INC.

ACCOUNT 308 INFILTRATION GALLERIES AND TUNNELS

CALCULATED REMAINING LIFE DEPRECIATION ACCRUAL
RELATED TO ORIGINAL COST AS OF DECEMBER 31, 2018

YEAR (1)	ORIGINAL COST (2)	CALCULATED ACCRUED (3)	ALLOC. BOOK RESERVE (4)	FUTURE BOOK ACCRUALS (5)	REM. LIFE (6)	ANNUAL ACCRUAL (7)
SURVIVOR CURVE.. IOWA 40-R2.5						
NET SALVAGE PERCENT.. 0						
1989	3,046.00	2,076	1,775	1,271	13.79	92
2016	10,312.04	786	672	9,640	30.29	318
	13,358.04	2,862	2,447	10,911		410
COMPOSITE REMAINING LIFE AND ANNUAL ACCRUAL RATE, PERCENT ..						26.6 3.07

SUEZ WATER PENNSYLVANIA, INC.

ACCOUNT 311.2 PUMPING EQUIPMENT - ELECTRIC PUMPING EQUIPMENT

CALCULATED REMAINING LIFE DEPRECIATION ACCRUAL
RELATED TO ORIGINAL COST AS OF DECEMBER 31, 2018

YEAR (1)	ORIGINAL COST (2)	CALCULATED ACCRUED (3)	ALLOC. BOOK RESERVE (4)	FUTURE BOOK ACCRUALS (5)	REM. LIFE (6)	ANNUAL ACCRUAL (7)
SURVIVOR CURVE.. IOWA 36-R0.5						
NET SALVAGE PERCENT.. 0						
1894	500.06	500	500			
1919	0.24					
1921	6,991.28	6,991	6,991			
1924	0.17					
1926	994.05	994	994			
1927	124.61	125	125			
1928	975.66	976	976			
1931	0.35					
1936	0.11					
1943	174.64	175	175			
1945	0.35					
1946	312.35	312	312			
1947	66.46	66	66			
1950	2,289.40	2,243	2,289			
1951	8.06	8	8			
1952	0.98	1	1			
1954	523.00	496	523			
1955	1,512.02	1,421	1,512			
1957	99.25	92	99			
1958	2,756.53	2,551	2,757			
1959	156.99	144	157			
1960	24.66	23	25			
1961	115.98	105	116			
1962	3,431.97	3,083	3,432			
1963	8,358.89	7,423	8,359			
1964	4,363.87	3,853	4,364			
1965	1,216.98	1,068	1,217			
1966	18,912.96	16,483	18,913			
1967	296.47	255	296			
1968	558.10	476	558			
1971	5,358.52	4,454	5,247	112	9.65	12
1972	5,125.34	4,218	4,969	156	10.00	16
1973	2,896.56	2,359	2,779	118	10.37	11
1974	29,349.14	23,638	27,846	1,503	10.75	140
1975	14,442.73	11,496	13,543	900	11.15	81
1976	9,330.73	7,376	8,689	642	11.26	57
1977	3,132.76	2,444	2,879	254	11.69	22
1978	19,918.50	15,327	18,056	1,862	12.13	154
1979	58,329.50	44,237	52,113	6,216	12.58	494
1980	109,667.92	82,339	96,998	12,670	12.78	991
1981	38,291.52	28,290	33,327	4,965	13.26	374
1982	154,574.14	112,839	132,928	21,646	13.50	1,603
1983	29,232.81	20,963	24,695	4,538	14.00	324

SUEZ WATER PENNSYLVANIA, INC.

ACCOUNT 311.2 PUMPING EQUIPMENT - ELECTRIC PUMPING EQUIPMENT

CALCULATED REMAINING LIFE DEPRECIATION ACCRUAL
RELATED TO ORIGINAL COST AS OF DECEMBER 31, 2018

YEAR (1)	ORIGINAL COST (2)	CALCULATED ACCRUED (3)	ALLOC. BOOK RESERVE (4)	FUTURE BOOK ACCRUALS (5)	REM. LIFE (6)	ANNUAL ACCRUAL (7)
SURVIVOR CURVE.. IOWA 36-R0.5						
NET SALVAGE PERCENT.. 0						
1984	370,225.27	261,823	308,437	61,788	14.28	4,327
1985	110,593.57	77,062	90,782	19,812	14.58	1,359
1986	98,203.01	67,024	78,957	19,246	15.12	1,273
1987	75,436.82	50,618	59,630	15,807	15.45	1,023
1988	197,227.92	129,934	153,067	44,161	15.80	2,795
1989	171,302.58	110,661	130,362	40,941	16.16	2,533
1990	266,744.96	168,770	198,817	67,928	16.55	4,104
1991	14,965.27	9,301	10,957	4,008	16.75	239
1992	43,999.83	26,699	31,452	12,548	17.17	731
1993	528,409.68	312,607	368,262	160,148	17.60	9,099
1994	171,030.87	98,890	116,496	54,535	17.87	3,052
1995	51,287.93	28,803	33,931	17,357	18.34	946
1996	116,715.75	63,820	75,182	41,534	18.65	2,227
1997	115,444.66	61,301	72,215	43,230	18.99	2,276
1998	360,489.97	185,508	218,535	141,955	19.34	7,340
1999	1,497,024.16	747,314	880,361	616,663	19.56	31,527
2000	70,680.61	33,997	40,050	30,631	19.96	1,535
2001	196,365.85	91,074	107,288	89,078	20.23	4,403
2002	90,529.06	40,485	47,693	42,836	20.40	2,100
2003	83,773.18	35,838	42,218	41,555	20.73	2,005
2004	13,521.16	5,529	6,513	7,008	20.96	334
2005	232.04	90	106	126	21.22	6
2006	14.67	5	6	9	21.40	
2007	82,320.05	28,680	33,786	48,534	21.50	2,257
2008	93,650.49	30,586	36,031	57,619	21.65	2,661
2009	199,113.86	60,531	71,308	127,806	21.75	5,876
2010	339,498.09	95,535	112,544	226,954	21.71	10,454
2011	116,485.22	29,878	35,197	81,288	21.74	3,739
2012	84,964.47	19,661	23,161	61,803	21.59	2,863
2013	40,701.32	8,327	9,809	30,892	21.38	1,445
2014	128,207.07	22,564	26,581	101,626	21.07	4,823
2015	277,584.27	40,416	47,611	229,973	20.54	11,196
2016	6,328,964.32	712,008	838,771	5,490,193	19.72	278,407
2017	1,131,114.94	85,286	100,470	1,030,645	18.38	56,074
2018	871,966.46	27,903	32,871	839,095	15.12	55,496
	14,873,205.99	4,178,372	4,918,291	9,954,915		524,804

COMPOSITE REMAINING LIFE AND ANNUAL ACCRUAL RATE, PERCENT .. 19.0 3.53

SUEZ WATER PENNSYLVANIA, INC.

ACCOUNT 311.3 PUMPING EQUIPMENT - OIL ENGINE PUMPING EQUIPMENT

CALCULATED REMAINING LIFE DEPRECIATION ACCRUAL
RELATED TO ORIGINAL COST AS OF DECEMBER 31, 2018

YEAR (1)	ORIGINAL COST (2)	CALCULATED ACCRUED (3)	ALLOC. BOOK RESERVE (4)	FUTURE BOOK ACCRUALS (5)	REM. LIFE (6)	ANNUAL ACCRUAL (7)
SURVIVOR CURVE.. IOWA 35-R2						
NET SALVAGE PERCENT.. 0						
1988	886.00	654	862	24	10.82	2
1990	15,911.81	11,291	14,877	1,035	11.66	89
1993	232,630.00	153,629	202,426	30,204	13.11	2,304
2003	1,598.77	726	957	642	18.63	34
2006	63,129.01	24,065	31,708	31,421	20.29	1,549
	314,155.59	190,365	250,830	63,326		3,978
COMPOSITE REMAINING LIFE AND ANNUAL ACCRUAL RATE, PERCENT ..						15.9 1.27

SUEZ WATER PENNSYLVANIA, INC.

ACCOUNT 320.1 WATER TREATMENT PLANT - STRUCTURES AND IMPROVEMENTS

CALCULATED REMAINING LIFE DEPRECIATION ACCRUAL
RELATED TO ORIGINAL COST AS OF DECEMBER 31, 2018

YEAR (1)	ORIGINAL COST (2)	CALCULATED ACCRUED (3)	ALLOC. BOOK RESERVE (4)	FUTURE BOOK ACCRUALS (5)	REM. LIFE (6)	ANNUAL ACCRUAL (7)
BLOOMSBURG TREATMENT PLANT						
INTERIM SURVIVOR CURVE.. IOWA 50-R1.5						
PROBABLE RETIREMENT YEAR.. 6-2028						
NET SALVAGE PERCENT.. 0						
1992	320,608.00	240,456	309,721	10,887	8.83	1,233
2000	2,999.53	2,014	2,594	405	9.05	45
2001	12,446.68	8,212	10,578	1,869	9.02	207
2003	2,300.00	1,451	1,869	431	9.07	48
	338,354.21	252,133	324,762	13,592		1,533
BLOOMSBURG TREATMENT PLANT - NEW						
INTERIM SURVIVOR CURVE.. IOWA 50-R1.5						
PROBABLE RETIREMENT YEAR.. 6-2076						
NET SALVAGE PERCENT.. 0						
2016	13,501,911.63	1,009,943	1,300,866	12,201,046	30.94	394,345
	13,501,911.63	1,009,943	1,300,866	12,201,046		394,345
SIXTH STREET PLANT						
INTERIM SURVIVOR CURVE.. IOWA 50-R1.5						
PROBABLE RETIREMENT YEAR.. 6-2045						
NET SALVAGE PERCENT.. 0						
1964	81,783.22	66,858	81,783			
1974	32,170.45	23,909	30,819	1,352	15.38	88
1975	21,117.60	15,526	20,013	1,104	15.67	70
1980	348,524.36	241,527	311,331	37,194	17.06	2,180
1982	39,757.61	26,844	34,602	5,155	17.56	294
1983	32,615.67	21,650	27,907	4,709	17.98	262
1984	1,121.38	735	947	174	18.13	10
1985	10,740.00	6,944	8,951	1,789	18.31	98
1986	812.48	518	668	145	18.52	8
1987	5,047.62	3,164	4,078	969	18.75	52
1988	2,475.60	1,525	1,966	510	19.00	27
1989	21,600.63	13,064	16,840	4,761	19.28	247
1990	34,098.83	20,214	26,056	8,043	19.58	411
1991	62,596.16	36,494	47,041	15,555	19.67	791
1992	45,142.86	25,722	33,156	11,987	20.01	599
1993	2,193,699.30	1,224,962	1,578,989	614,711	20.16	30,492
1994	161,803.14	88,409	113,960	47,843	20.34	2,352
1995	4,650.82	2,481	3,198	1,453	20.56	71
1996	181,896.59	94,950	122,392	59,505	20.60	2,889

SUEZ WATER PENNSYLVANIA, INC.

ACCOUNT 320.1 WATER TREATMENT PLANT - STRUCTURES AND IMPROVEMENTS

CALCULATED REMAINING LIFE DEPRECIATION ACCRUAL
RELATED TO ORIGINAL COST AS OF DECEMBER 31, 2018

YEAR (1)	ORIGINAL COST (2)	CALCULATED ACCRUED (3)	ALLOC. BOOK RESERVE (4)	FUTURE BOOK ACCRUALS (5)	REM. LIFE (6)	ANNUAL ACCRUAL (7)
SIXTH STREET PLANT						
INTERIM SURVIVOR CURVE.. IOWA 50-R1.5						
PROBABLE RETIREMENT YEAR.. 6-2045						
NET SALVAGE PERCENT.. 0						
1997	10,804.58	5,482	7,066	3,738	20.87	179
1998	217,622.16	107,505	138,575	79,047	21.00	3,764
1999	292,830.89	140,471	181,069	111,762	21.15	5,284
2000	20,672.33	9,637	12,422	8,250	21.18	390
2001	55,120.94	24,793	31,958	23,163	21.41	1,082
2002	208,329.01	90,415	116,546	91,783	21.52	4,265
2003	99,655.29	41,706	53,759	45,896	21.54	2,131
2004	210,999.10	84,442	108,847	102,152	21.73	4,701
2005	4,656,145.29	1,785,166	2,301,097	2,355,048	21.71	108,478
2006	614,798.60	223,664	288,305	326,493	21.86	14,936
2008	329,636.11	106,604	137,414	192,222	21.97	8,749
2009	11,940.26	3,607	4,649	7,291	21.95	332
2010	95,526.22	26,633	34,330	61,196	21.99	2,783
2011	34,026.15	8,649	11,149	22,878	22.00	1,040
2012	37,555.66	8,570	11,047	26,509	21.99	1,206
2013	22,810.26	4,580	5,904	16,907	21.90	772
2014	55,570.18	9,503	12,249	43,321	21.82	1,985
2015	2,200.21	306	394	1,806	21.63	83
2016	198,542.58	20,807	26,820	171,722	21.37	8,036
2017	17,513.19	1,177	1,517	15,996	20.82	768
2018	101,260.62	2,552	3,290	97,971	19.30	5,076
	10,575,213.95	4,621,765	5,953,105	4,622,109		216,981

RICHARD C. RABOLD PLANT
INTERIM SURVIVOR CURVE.. IOWA 50-R1.5
PROBABLE RETIREMENT YEAR.. 6-2043
NET SALVAGE PERCENT.. 0

1909	9,947.61	9,948	9,948			
1933	6,834.00	6,485	6,834			
1934	1.69	2	2			
1960	508.33	428	508			
1976	240,408.00	176,748	228,509	11,899	15.31	777
1977	16,375.00	11,892	15,375	1,000	15.65	64
1982	3,104.00	2,119	2,740	364	16.97	21
1985	100.00	66	85	15	17.52	1
1989	2,151.00	1,326	1,714	437	18.34	24
1990	9,634.00	5,821	7,526	2,108	18.67	113
1992	132,703.00	77,366	100,023	32,680	18.95	1,725

SUEZ WATER PENNSYLVANIA, INC.

ACCOUNT 320.1 WATER TREATMENT PLANT - STRUCTURES AND IMPROVEMENTS

CALCULATED REMAINING LIFE DEPRECIATION ACCRUAL
RELATED TO ORIGINAL COST AS OF DECEMBER 31, 2018

YEAR (1)	ORIGINAL COST (2)	CALCULATED ACCRUED (3)	ALLOC. BOOK RESERVE (4)	FUTURE BOOK ACCRUALS (5)	REM. LIFE (6)	ANNUAL ACCRUAL (7)
RICHARD C. RABOLD PLANT						
INTERIM SURVIVOR CURVE.. IOWA 50-R1.5						
PROBABLE RETIREMENT YEAR.. 6-2043						
NET SALVAGE PERCENT.. 0						
1993	1,041,144.39	594,702	768,861	272,284	19.14	14,226
1994	8,888.00	4,965	6,419	2,469	19.36	128
2009	1,555.49	488	631	925	20.80	44
2010	30,682.16	8,919	11,531	19,151	20.74	923
2011	29,496.46	7,831	10,124	19,372	20.75	934
2013	2,626.71	552	714	1,913	20.68	93
2015	207,777.52	30,336	39,220	168,558	20.48	8,230
2016	9,069.23	998	1,290	7,779	20.23	385
2017	3,578.56	253	327	3,251	19.73	165
	1,756,585.15	941,245	1,212,379	544,206		27,853

MARKET STREET PLANT
INTERIM SURVIVOR CURVE.. IOWA 50-R1.5
PROBABLE RETIREMENT YEAR.. 6-2024
NET SALVAGE PERCENT.. 0

1964	17,630.97	16,238	17,631			
1965	210.25	192	210			
1968	1,834.00	1,667	1,834			
1985	2,151.00	1,859	2,151			
1986	4,743.00	4,085	4,743			
1987	1,012.00	867	1,012			
1988	1,547.00	1,321	1,547			
1989	13,488.00	11,459	13,488			
1991	1,081.00	907	1,081			
1992	1,799.00	1,497	1,799			
2000	3,226.59	2,501	3,227			
2001	7,336.96	5,611	7,337			
2002	42,716.60	32,208	42,717			
2004	19,675.42	14,351	19,675			
2009	3,704.45	2,365	3,294	410	5.38	76
2011	276.59	161	224	52	5.39	10
2013	35,393.07	17,870	24,892	10,501	5.39	1,948
2014	4,741.09	2,157	3,005	1,736	5.39	322
2015	30,054.86	11,845	16,500	13,555	5.38	2,520
	192,621.85	129,161	166,367	26,255		4,876

SUEZ WATER PENNSYLVANIA, INC.

ACCOUNT 320.1 WATER TREATMENT PLANT - STRUCTURES AND IMPROVEMENTS

CALCULATED REMAINING LIFE DEPRECIATION ACCRUAL
RELATED TO ORIGINAL COST AS OF DECEMBER 31, 2018

YEAR (1)	ORIGINAL COST (2)	CALCULATED ACCRUED (3)	ALLOC. BOOK RESERVE (4)	FUTURE BOOK ACCRUALS (5)	REM. LIFE (6)	ANNUAL ACCRUAL (7)
OLD HUMMELSTOWN PLANT FULLY ACCRUED						
1908	4,950.55	4,951	4,951			
1917	207.30	207	207			
1922	7,324.97	7,325	7,325			
1931	181.24	181	181			
1954	206.47	206	206			
1960	517.38	517	517			
1962	1,554.21	1,554	1,554			
1971	56,762.98	56,763	56,763			
1977	47,799.00	47,799	47,799			
1978	29,711.00	29,711	29,711			
1979	13,197.00	13,197	13,197			
1980	17,683.18	17,683	17,683			
1981	52,998.00	52,998	52,998			
1982	3,640.00	3,640	3,640			
1983	31,609.00	31,609	31,609			
1984	32,262.00	32,262	32,262			
1985	914.00	914	914			
1986	7,375.00	7,375	7,375			
1987	5,303.00	5,303	5,303			
1990	64,666.00	64,666	64,666			
1991	235,997.00	235,997	235,997			
1992	11,868.00	11,868	11,868			
1994	31,554.00	31,554	31,554			
1999	139,931.86	139,932	139,932			
2000	30,976.50	30,976	30,976			
2001	25,263.56	25,264	25,264			
2003	526.26	526	526			
2004	3,454.18	3,454	3,454			
	858,433.64	858,432	858,434			

HUMMELSTOWN MEMBRANE PLANT
INTERIM SURVIVOR CURVE.. IOWA 50-R1.5
PROBABLE RETIREMENT YEAR.. 6-2061
NET SALVAGE PERCENT.. 0

2006	7,934,795.16	2,420,113	3,311,134	4,623,662	28.48	162,348
2009	2,669.33	659	902	1,768	28.96	61
2010	35,133.40	7,944	10,869	24,265	29.09	834
2011	1,444,914.45	295,918	404,867	1,040,047	29.13	35,704

SUEZ WATER PENNSYLVANIA, INC.

ACCOUNT 320.1 WATER TREATMENT PLANT - STRUCTURES AND IMPROVEMENTS

CALCULATED REMAINING LIFE DEPRECIATION ACCRUAL
RELATED TO ORIGINAL COST AS OF DECEMBER 31, 2018

YEAR (1)	ORIGINAL COST (2)	CALCULATED ACCRUED (3)	ALLOC. BOOK RESERVE (4)	FUTURE BOOK ACCRUALS (5)	REM. LIFE (6)	ANNUAL ACCRUAL (7)
HUMMELSTOWN MEMBRANE PLANT						
INTERIM SURVIVOR CURVE.. IOWA 50-R1.5						
PROBABLE RETIREMENT YEAR.. 6-2061						
NET SALVAGE PERCENT.. 0						
2014	13,281.37	1,793	2,453	10,828	28.83	376
2015	7,484.41	817	1,118	6,367	28.55	223
2017	31,104.26	1,630	2,230	28,874	27.15	1,063
	9,469,382.38	2,728,874	3,733,572	5,735,810		200,609
OTHER TREATMENT FACILITIES						
SURVIVOR CURVE.. IOWA 40-R1.5						
NET SALVAGE PERCENT.. 0						
1929	17,412.05	17,412	17,412			
1957	0.31		0			
1958	54,748.74	50,347	54,749			
1959	2,391.51	2,191	2,392			
1960	5,199.01	4,745	5,199			
1962	7,761.03	6,973	7,761			
1973	165.00	137	165			
1978	29,680.00	23,198	29,680			
1980	1,393.00	1,056	1,393			
1984	13,333.00	9,522	13,333			
1996	8,770.54	4,717	6,961	1,809	19.34	94
1997	181,545.78	94,458	139,400	42,146	19.82	2,126
1998	1,566.87	787	1,161	405	20.32	20
1999	234.62	113	167	68	20.82	3
2000	7,376.25	3,426	5,056	2,320	21.34	109
2002	2,576.89	1,097	1,619	958	22.26	43
2003	697.56	282	416	281	22.81	12
2004	5,135.24	1,973	2,912	2,224	23.24	96
2005	11,600.36	4,213	6,217	5,383	23.67	227
2006	160,137.20	54,639	80,635	79,502	24.13	3,295
2007	5,709.50	1,825	2,693	3,016	24.47	123
2008	7,640.13	2,271	3,352	4,289	24.83	173
2009	66,155.35	18,100	26,712	39,444	25.22	1,564
2010	85,835.83	21,373	31,542	54,294	25.63	2,118
2011	80,156.71	18,035	26,616	53,541	25.83	2,073
2012	38,415.82	7,668	11,316	27,100	26.07	1,040
2013	2,979.47	516	762	2,218	26.25	84
2014	3,493.68	511	754	2,740	26.27	104

SUEZ WATER PENNSYLVANIA, INC.

ACCOUNT 320.1 WATER TREATMENT PLANT - STRUCTURES AND IMPROVEMENTS

CALCULATED REMAINING LIFE DEPRECIATION ACCRUAL
RELATED TO ORIGINAL COST AS OF DECEMBER 31, 2018

YEAR (1)	ORIGINAL COST (2)	CALCULATED ACCRUED (3)	ALLOC. BOOK RESERVE (4)	FUTURE BOOK ACCRUALS (5)	REM. LIFE (6)	ANNUAL ACCRUAL (7)
OTHER TREATMENT FACILITIES						
SURVIVOR CURVE.. IOWA 40-R1.5						
NET SALVAGE PERCENT.. 0						
2015	7,510.33	883	1,303	6,207	26.26	236
2016	16,095.96	1,416	2,090	14,006	25.91	541
2017	67,096.45	3,784	5,584	61,512	25.10	2,451
	892,814.19	357,668	489,352	403,462		16,532
	37,585,317.00	10,899,221	14,038,837	23,546,480		862,729
COMPOSITE REMAINING LIFE AND ANNUAL ACCRUAL RATE, PERCENT ..					27.3	2.30

SUEZ WATER PENNSYLVANIA, INC.

ACCOUNT 320.2 WATER TREATMENT PLANT - PAINTING

CALCULATED REMAINING LIFE DEPRECIATION ACCRUAL
RELATED TO ORIGINAL COST AS OF DECEMBER 31, 2018

YEAR (1)	ORIGINAL COST (2)	CALCULATED ACCRUED (3)	ALLOC. BOOK RESERVE (4)	FUTURE BOOK ACCRUALS (5)	REM. LIFE (6)	ANNUAL ACCRUAL (7)
SURVIVOR CURVE.. 10-SQUARE						
NET SALVAGE PERCENT.. 0						
2002	44,639.80	44,640	44,640			
2004	1,505.51	1,506	1,506			
2011	82,942.78	62,207	63,499	19,444	2.50	7,778
2015	318,436.73	111,453	113,769	204,668	6.50	31,487
	447,524.82	219,806	223,414	224,111		39,265
COMPOSITE REMAINING LIFE AND ANNUAL ACCRUAL RATE, PERCENT ..						5.7 8.77

SUEZ WATER PENNSYLVANIA, INC.

ACCOUNT 320.3 WATER TREATMENT PLANT - CHEMICAL EQUIPMENT

CALCULATED REMAINING LIFE DEPRECIATION ACCRUAL
RELATED TO ORIGINAL COST AS OF DECEMBER 31, 2018

YEAR (1)	ORIGINAL COST (2)	CALCULATED ACCRUED (3)	ALLOC. BOOK RESERVE (4)	FUTURE BOOK ACCRUALS (5)	REM. LIFE (6)	ANNUAL ACCRUAL (7)
SURVIVOR CURVE.. IOWA 25-S0.5						
NET SALVAGE PERCENT.. 0						
1939	64.30	64	64			
1951	51.91	52	52			
1954	267.14	267	267			
1955	21.54	22	22			
1958	111.66	112	112			
1963	777.62	778	778			
1964	692.09	692	692			
1967	1,418.80	1,419	1,419			
1968	675.12	675	675			
1971	559.54	550	161	399	0.81	399
1972	1,581.13	1,544	451	1,130	1.12	1,009
1973	251.27	244	71	180	1.45	124
1974	9,968.07	9,581	2,801	7,167	1.80	3,982
1975	7,104.54	6,768	1,979	5,126	2.16	2,373
1976	7,911.71	7,465	2,183	5,729	2.55	2,247
1977	96.76	91	27	70	2.75	25
1978	1,268.83	1,177	344	925	3.17	292
1979	3,475.99	3,199	935	2,541	3.42	743
1980	59,020.63	53,850	15,744	43,277	3.70	11,696
1981	1,082.84	979	286	797	3.99	200
1982	36,254.54	32,419	9,478	26,777	4.32	6,198
1983	4,204.17	3,716	1,086	3,118	4.66	669
1984	8,394.43	7,327	2,142	6,252	5.03	1,243
1985	24,152.06	20,875	6,103	18,049	5.26	3,431
1986	22,872.19	19,551	5,716	17,156	5.52	3,108
1987	33,911.11	28,519	8,338	25,573	5.96	4,291
1988	8,408.14	6,975	2,039	6,369	6.26	1,017
1989	15,162.37	12,435	3,636	11,526	6.47	1,781
1990	35,939.91	28,989	8,476	27,464	6.83	4,021
1991	4,378.11	3,467	1,014	3,364	7.22	466
1993	2,643.47	2,022	591	2,052	7.83	262
1994	18,762.64	14,066	4,113	14,650	8.18	1,791
1995	76,708.32	56,427	16,498	60,210	8.45	7,125
1996	24,800.38	17,856	5,221	19,579	8.75	2,238
1997	1,339,226.89	938,664	274,441	1,064,786	9.17	116,116
1998	8,990.49	6,156	1,800	7,190	9.44	762
1999	24,967.79	16,604	4,855	20,113	9.82	2,048
2000	44,263.47	28,576	8,355	35,908	10.15	3,538
2001	17,455.04	10,906	3,189	14,266	10.51	1,357
2002	105,566.43	63,752	18,639	86,927	10.82	8,034
2003	9,435.54	5,470	1,599	7,837	11.24	697
2004	31,387.26	17,476	5,110	26,277	11.54	2,277
2005	642,550.35	340,937	99,681	542,869	11.94	45,466

SUEZ WATER PENNSYLVANIA, INC.

ACCOUNT 320.3 WATER TREATMENT PLANT - CHEMICAL EQUIPMENT

CALCULATED REMAINING LIFE DEPRECIATION ACCRUAL
RELATED TO ORIGINAL COST AS OF DECEMBER 31, 2018

YEAR (1)	ORIGINAL COST (2)	CALCULATED ACCRUED (3)	ALLOC. BOOK RESERVE (4)	FUTURE BOOK ACCRUALS (5)	REM. LIFE (6)	ANNUAL ACCRUAL (7)
SURVIVOR CURVE.. IOWA 25-S0.5						
NET SALVAGE PERCENT.. 0						
2006	674,271.99	339,698	99,319	574,953	12.31	46,706
2007	150,297.63	71,391	20,873	129,425	12.71	10,183
2008	19,639.19	8,743	2,556	17,083	13.08	1,306
2009	291,695.33	120,820	35,325	256,370	13.44	19,075
2010	407,795.66	154,962	45,307	362,489	13.87	26,135
2011	143,266.28	49,427	14,451	128,815	14.24	9,046
2012	37,354.24	11,483	3,357	33,997	14.64	2,322
2013	11,462.57	3,064	896	10,567	15.08	701
2014	102,449.67	23,092	6,751	95,699	15.46	6,190
2015	19,819.06	3,579	1,046	18,773	15.88	1,182
2016	1,898,015.96	252,436	73,806	1,824,210	16.30	111,915
2017	121,027.81	9,985	2,919	118,109	16.68	7,081
2018	225,023.60	6,436	1,882	223,142	16.98	13,141
	6,738,955.58	2,827,830	829,671	5,909,285		496,009
COMPOSITE REMAINING LIFE AND ANNUAL ACCRUAL RATE, PERCENT ..						11.9 7.36

SUEZ WATER PENNSYLVANIA, INC.

ACCOUNT 330 DISTRIBUTION RESERVOIRS AND STANDPIPES

CALCULATED REMAINING LIFE DEPRECIATION ACCRUAL
RELATED TO ORIGINAL COST AS OF DECEMBER 31, 2018

YEAR (1)	ORIGINAL COST (2)	CALCULATED ACCRUED (3)	ALLOC. BOOK RESERVE (4)	FUTURE BOOK ACCRUALS (5)	REM. LIFE (6)	ANNUAL ACCRUAL (7)
SURVIVOR CURVE.. IOWA 45-R1.5						
NET SALVAGE PERCENT.. 0						
1928	112.73	112	113			
1931	794.10	785	794			
1933	40.33	40	40			
1936	7,766.01	7,560	7,766			
1941	5,910.12	5,634	5,821	89	3.80	23
1942	345.77	328	339	7	4.15	2
1943	587.04	558	577	10	3.87	3
1952	1,447.33	1,319	1,363	84	6.50	13
1954	0.21					
1955	639.74	577	596	44	6.92	6
1957	131.31	117	121	10	7.46	1
1960	2,845.49	2,480	2,562	283	8.62	33
1961	40,089.28	34,806	35,960	4,129	8.73	473
1962	1,726.12	1,482	1,531	195	9.29	21
1963	47,720.98	40,787	42,140	5,581	9.44	591
1965	1,893.38	1,590	1,643	250	10.19	25
1967	22,017.79	18,257	18,863	3,155	10.61	297
1968	1,619.70	1,333	1,377	243	10.85	22
1969	43,022.98	34,926	36,084	6,939	11.48	604
1970	2,987.07	2,405	2,485	502	11.74	43
1972	4,484.57	3,545	3,663	822	12.32	67
1973	26,969.15	21,106	21,806	5,163	12.64	408
1974	21,030.45	16,189	16,726	4,304	13.31	323
1975	8,683.48	6,610	6,829	1,854	13.65	136
1976	9,534.60	7,172	7,410	2,125	14.00	152
1977	602.48	448	463	139	14.37	10
1979	684.05	494	510	174	15.15	11
1980	52,649.43	37,497	38,741	13,908	15.56	894
1982	94,050.58	64,876	67,028	27,023	16.41	1,647
1983	13,782.47	9,296	9,604	4,178	17.13	244
1984	136,132.21	90,174	93,165	42,967	17.58	2,444
1985	248,954.75	161,796	167,163	81,792	18.05	4,531
1986	136,637.25	87,475	90,376	46,261	18.26	2,533
1987	18,431.00	11,553	11,936	6,495	18.75	346
1988	238,028.92	145,912	150,752	87,277	19.25	4,534
1989	91,319.77	54,682	56,496	34,824	19.76	1,762
1990	290,496.60	169,708	175,337	115,160	20.28	5,679
1991	406,821.89	231,563	239,244	167,578	20.81	8,053
1992	107,862.69	59,734	61,715	46,148	21.35	2,161
1993	88,834.44	48,024	49,617	39,217	21.67	1,810
1994	193,045.93	101,214	104,571	88,475	22.23	3,980
1995	125,408.54	63,657	65,768	59,641	22.80	2,616
1996	69,485.85	34,243	35,379	34,107	23.16	1,473

SUEZ WATER PENNSYLVANIA, INC.

ACCOUNT 330 DISTRIBUTION RESERVOIRS AND STANDPIPES

CALCULATED REMAINING LIFE DEPRECIATION ACCRUAL
RELATED TO ORIGINAL COST AS OF DECEMBER 31, 2018

YEAR (1)	ORIGINAL COST (2)	CALCULATED ACCRUED (3)	ALLOC. BOOK RESERVE (4)	FUTURE BOOK ACCRUALS (5)	REM. LIFE (6)	ANNUAL ACCRUAL (7)
SURVIVOR CURVE.. IOWA 45-R1.5						
NET SALVAGE PERCENT.. 0						
1997	53,214.52	25,288	26,127	27,088	23.75	1,141
1998	165,953.17	76,206	78,734	87,219	24.14	3,613
2000	237,886.11	100,769	104,111	133,775	25.17	5,315
2001	63,972.47	25,973	26,835	37,137	25.60	1,451
2002	90,543.07	35,113	36,278	54,265	26.05	2,083
2003	14,528.96	5,360	5,538	8,991	26.52	339
2004	425,439.42	148,649	153,579	271,860	27.00	10,069
2005	10,058.85	3,327	3,437	6,622	27.31	242
2006	259,732.86	80,517	83,188	176,545	27.82	6,346
2007	20,603.61	5,971	6,169	14,435	28.18	512
2008	38,249.58	10,320	10,662	27,588	28.41	971
2009	1,814,665.93	450,037	464,964	1,349,702	28.81	46,848
2010	3,102,644.64	701,508	724,777	2,377,868	29.09	81,742
2011	65,680.95	13,399	13,843	51,838	29.26	1,772
2014	3,595.46	474	490	3,105	29.63	105
2015	258,845.87	27,541	28,454	230,392	29.39	7,839
2016	182,071.80	14,475	14,955	167,117	28.95	5,773
2017	333,549.08	16,944	17,506	316,043	28.00	11,287
2018	1,862,115.32	36,497	37,708	1,824,407	25.07	72,773
	11,568,980.25	3,360,432	3,471,829	8,097,151		308,192
COMPOSITE REMAINING LIFE AND ANNUAL ACCRUAL RATE, PERCENT ..						26.3 2.66

SUEZ WATER PENNSYLVANIA, INC.

ACCOUNT 331 TRANSMISSION AND DISTRIBUTION MAINS

CALCULATED REMAINING LIFE DEPRECIATION ACCRUAL
RELATED TO ORIGINAL COST AS OF DECEMBER 31, 2018

YEAR (1)	ORIGINAL COST (2)	CALCULATED ACCRUED (3)	ALLOC. BOOK RESERVE (4)	FUTURE BOOK ACCRUALS (5)	REM. LIFE (6)	ANNUAL ACCRUAL (7)
SURVIVOR CURVE.. IOWA 80-R3						
NET SALVAGE PERCENT.. 0						
1893	33.30	33	33			
1894	474.95	467	254	221	2.08	106
1895	1,686.65	1,645	894	793	3.09	257
1896	519.15	509	277	242	2.50	97
1897	574.34	558	303	271	3.50	77
1898	136.95	134	73	64	2.96	22
1899	1,339.06	1,296	705	634	3.95	161
1900	40,917.67	39,760	21,616	19,302	3.45	5,595
1901	10,857.52	10,461	5,687	5,171	4.45	1,162
1902	153.72	149	81	73	3.98	18
1903	82.71	79	43	40	4.99	8
1904	4.20	4	4			
1905	598.26	570	310	288	5.55	52
1906	3,296.60	3,152	1,714	1,583	5.15	307
1907	7.13	7	7			
1908	53,531.27	50,871	27,657	25,874	5.78	4,476
1909	37,106.76	34,943	18,997	18,110	6.78	2,671
1910	3,235.40	3,054	1,660	1,575	6.44	245
1911	347.70	329	179	169	6.14	28
1912	17,257.30	16,174	8,793	8,464	7.14	1,185
1913	882.36	829	451	431	6.85	63
1914	20,967.45	19,500	10,602	10,365	7.87	1,317
1915	2,264.72	2,110	1,147	1,118	7.61	147
1916	1,094.44	1,021	555	539	7.38	73
1917	544.56	503	273	272	8.40	32
1918	88.44	82	45	43	8.20	5
1919	812.04	751	408	404	8.02	50
1920	3,171.54	2,905	1,579	1,593	9.03	176
1921	1,206.85	1,106	601	606	8.88	68
1922	1,341.63	1,217	662	680	9.88	69
1923	953.79	865	470	484	9.77	50
1924	2,208.33	2,003	1,089	1,119	9.67	116
1925	7,288.43	6,542	3,557	3,731	10.67	350
1926	1,089.06	977	531	558	10.60	53
1927	16,840.81	15,101	8,210	8,631	10.54	819
1928	14,276.99	12,662	6,884	7,393	11.54	641
1929	11,046.91	9,788	5,321	5,726	11.52	497
1930	9,438.47	8,353	4,541	4,897	11.50	426
1931	3,224.84	2,822	1,534	1,691	12.50	135
1932	1,362.32	1,190	647	715	12.51	57
1933	3,423.30	2,985	1,623	1,800	12.54	144
1934	4,251.62	3,664	1,992	2,260	13.54	167
1935	5,653.58	4,862	2,643	3,011	13.59	222

SUEZ WATER PENNSYLVANIA, INC.

ACCOUNT 331 TRANSMISSION AND DISTRIBUTION MAINS

CALCULATED REMAINING LIFE DEPRECIATION ACCRUAL
RELATED TO ORIGINAL COST AS OF DECEMBER 31, 2018

YEAR (1)	ORIGINAL COST (2)	CALCULATED ACCRUED (3)	ALLOC. BOOK RESERVE (4)	FUTURE BOOK ACCRUALS (5)	REM. LIFE (6)	ANNUAL ACCRUAL (7)
SURVIVOR CURVE.. IOWA 80-R3						
NET SALVAGE PERCENT.. 0						
1936	5,027.32	4,313	2,345	2,682	13.65	196
1937	11,397.32	9,660	5,252	6,145	14.65	419
1938	9,928.06	8,391	4,562	5,366	14.74	364
1939	19,175.05	16,159	8,785	10,390	14.84	700
1940	4,581.30	3,812	2,072	2,509	15.84	158
1941	10,681.89	8,857	4,815	5,867	15.96	368
1942	13,365.00	11,042	6,003	7,362	16.09	458
1943	1,753.40	1,430	777	976	17.09	57
1944	8,656.58	7,029	3,821	4,836	17.25	280
1945	5,146.19	4,123	2,242	2,904	18.24	159
1946	20,464.10	16,320	8,873	11,591	18.41	630
1947	29,352.31	23,294	12,664	16,688	18.59	898
1948	53,231.04	41,659	22,649	30,582	19.59	1,561
1949	739.88	576	313	427	19.79	22
1950	22,094.86	16,951	9,216	12,879	20.79	619
1951	30,886.82	23,560	12,809	18,078	20.99	861
1952	53,202.60	40,333	21,928	31,275	21.22	1,474
1953	23,001.97	17,176	9,338	13,664	22.22	615
1954	9,613.12	7,131	3,877	5,736	22.45	256
1955	2,734.58	1,997	1,086	1,649	23.46	70
1956	46,080.64	33,408	18,163	27,918	23.71	1,177
1957	37,179.17	26,754	14,545	22,634	23.97	944
1958	104,266.71	73,800	40,123	64,144	24.97	2,569
1959	230,795.08	162,041	88,096	142,699	25.25	5,651
1960	294,655.93	203,401	110,582	184,074	26.25	7,012
1961	192,352.44	131,608	71,551	120,801	26.54	4,552
1962	111,130.02	74,724	40,625	70,505	27.53	2,561
1963	263,655.89	175,595	95,465	168,191	27.83	6,044
1964	530,927.57	347,227	188,776	342,152	28.83	11,868
1965	56,370.91	36,495	19,841	36,530	29.14	1,254
1966	261,554.04	166,139	90,324	171,230	30.15	5,679
1967	227,014.21	142,633	77,545	149,469	30.47	4,905
1968	199,503.98	123,932	67,378	132,126	30.80	4,290
1969	351,929.87	214,255	116,483	235,447	31.80	7,404
1970	541,843.41	325,865	177,162	364,681	32.15	11,343
1971	352,093.62	207,383	112,747	239,347	33.15	7,220
1972	391,221.73	227,378	123,618	267,604	33.50	7,988
1973	756,478.36	430,285	233,932	522,546	34.50	15,146
1974	459,488.07	257,635	140,068	319,420	34.87	9,160
1975	732,002.28	401,210	218,125	513,877	35.87	14,326
1976	347,739.00	187,710	102,052	245,687	36.24	6,779
1977	581,444.85	306,421	166,591	414,854	37.24	11,140
1978	1,217,678.35	631,244	343,187	874,491	37.62	23,245

SUEZ WATER PENNSYLVANIA, INC.

ACCOUNT 331 TRANSMISSION AND DISTRIBUTION MAINS

CALCULATED REMAINING LIFE DEPRECIATION ACCRUAL
RELATED TO ORIGINAL COST AS OF DECEMBER 31, 2018

YEAR (1)	ORIGINAL COST (2)	CALCULATED ACCRUED (3)	ALLOC. BOOK RESERVE (4)	FUTURE BOOK ACCRUALS (5)	REM. LIFE (6)	ANNUAL ACCRUAL (7)
SURVIVOR CURVE.. IOWA 80-R3						
NET SALVAGE PERCENT.. 0						
1979	486,816.90	246,135	133,816	353,001	38.62	9,140
1980	613,466.89	304,648	165,627	447,840	39.02	11,477
1981	435,321.13	210,608	114,501	320,820	40.02	8,016
1982	637,658.79	300,210	163,214	474,445	41.02	11,566
1983	470,491.83	217,132	118,048	352,444	41.42	8,509
1984	865,007.52	387,956	210,919	654,089	42.42	15,419
1985	1,627,924.39	714,333	388,359	1,239,565	42.84	28,935
1986	927,370.63	394,874	214,680	712,691	43.83	16,260
1987	2,973,282.42	1,236,291	672,131	2,301,151	44.26	51,992
1988	2,106,915.60	848,244	461,162	1,645,754	45.26	36,362
1989	2,222,823.56	872,236	474,206	1,748,618	45.68	38,280
1990	2,135,437.07	809,331	440,007	1,695,430	46.69	36,312
1991	2,229,667.57	821,632	446,694	1,782,974	47.13	37,831
1992	967,384.71	343,518	186,759	780,626	48.13	16,219
1993	1,667,444.22	569,766	309,763	1,357,681	49.13	27,634
1994	2,558,518.81	846,358	460,137	2,098,382	49.57	42,332
1995	1,758,072.35	557,661	303,182	1,454,890	50.58	28,764
1996	1,328,470.25	406,512	221,007	1,107,463	51.03	21,702
1997	3,251,221.00	950,657	516,841	2,734,380	52.03	52,554
1998	3,084,652.75	860,001	467,554	2,617,099	53.03	49,351
1999	2,798,850.70	747,853	406,583	2,392,268	53.49	44,724
2000	4,198,886.21	1,063,998	578,461	3,620,425	54.50	66,430
2001	3,461,860.49	836,039	454,527	3,007,333	54.96	54,719
2002	1,988,972.58	452,889	246,221	1,742,752	55.96	31,143
2003	4,228,361.43	904,447	491,718	3,736,643	56.96	65,601
2004	2,542,200.55	512,508	278,634	2,263,567	57.44	39,408
2005	3,339,915.88	626,568	340,645	2,999,271	58.45	51,313
2006	5,745,776.13	1,005,511	546,663	5,199,113	58.93	88,225
2007	3,861,501.20	621,702	337,999	3,523,502	59.93	58,794
2008	6,131,132.89	901,277	489,995	5,641,138	60.93	92,584
2009	4,532,329.44	607,332	330,187	4,202,142	61.42	68,417
2010	5,479,700.49	656,468	356,900	5,122,800	62.43	82,057
2011	5,950,152.08	633,691	344,517	5,605,635	62.92	89,091
2012	6,038,165.23	557,323	302,998	5,735,167	63.92	89,724
2013	2,368,812.83	186,189	101,225	2,267,588	64.43	35,195
2014	8,367,666.53	538,878	292,970	8,074,697	65.43	123,410
2015	6,683,890.63	336,868	183,144	6,500,747	65.94	98,586

SUEZ WATER PENNSYLVANIA, INC.

ACCOUNT 331 TRANSMISSION AND DISTRIBUTION MAINS

CALCULATED REMAINING LIFE DEPRECIATION ACCRUAL
RELATED TO ORIGINAL COST AS OF DECEMBER 31, 2018

YEAR (1)	ORIGINAL COST (2)	CALCULATED ACCRUED (3)	ALLOC. BOOK RESERVE (4)	FUTURE BOOK ACCRUALS (5)	REM. LIFE (6)	ANNUAL ACCRUAL (7)
SURVIVOR CURVE.. IOWA 80-R3						
NET SALVAGE PERCENT.. 0						
2016	9,410,435.17	340,658	185,205	9,225,230	66.47	138,788
2017	14,959,371.54	327,610	178,111	14,781,261	66.99	220,649
2018	20,732,838.95	153,423	83,411	20,649,428	66.62	309,958
	164,076,801.98	29,326,324	15,943,779	148,133,023		2,602,037
COMPOSITE REMAINING LIFE AND ANNUAL ACCRUAL RATE, PERCENT ..						56.9 1.59

SUEZ WATER PENNSYLVANIA, INC.

ACCOUNT 333 SERVICES

CALCULATED REMAINING LIFE DEPRECIATION ACCRUAL
RELATED TO ORIGINAL COST AS OF DECEMBER 31, 2018

YEAR (1)	ORIGINAL COST (2)	CALCULATED ACCRUED (3)	ALLOC. BOOK RESERVE (4)	FUTURE BOOK ACCRUALS (5)	REM. LIFE (6)	ANNUAL ACCRUAL (7)
SURVIVOR CURVE.. IOWA 60-S2.5						
NET SALVAGE PERCENT.. 0						
1921	23.74	23	23	1	4.54	
1922	860.94	823	827	34	4.51	8
1923	289.76	277	278	12	4.50	3
1924	228.34	218	219	9	4.51	2
1925	937.11	894	898	39	4.54	9
1927	121.48	116	117	4	4.65	1
1928	88.06	83	83	5	5.65	1
1930	82.15	77	77	5	5.84	1
1931	38.74	36	36	3	5.96	1
1932	114.38	107	107	7	6.09	1
1933	91.16	85	85	6	6.24	1
1934	127.11	118	119	8	6.41	1
1935	731.96	678	681	51	6.59	8
1936	347.85	321	322	26	6.79	4
1937	3.37	3	3			
1938	47.39	43	43	4	7.22	1
1939	231.18	211	212	19	7.46	3
1940	3,592.73	3,272	3,286	307	7.71	40
1941	459.65	417	419	41	7.97	5
1943	35.69	32	32	4	8.54	
1944	1,009.46	910	914	95	8.15	12
1946	221.94	198	199	23	8.80	3
1947	1,073.35	952	956	117	9.15	13
1948	11,437.38	10,079	10,123	1,314	9.50	138
1949	18,402.58	16,115	16,186	2,217	9.87	225
1950	8,870.00	7,777	7,811	1,059	9.62	110
1951	15,856.92	13,808	13,869	1,988	10.02	198
1953	28,831.56	24,737	24,846	3,986	10.84	368
1955	34,838.53	29,644	29,775	5,064	11.13	455
1956	30,796.55	25,986	26,100	4,697	11.57	406
1957	31,758.21	26,563	26,680	5,078	12.03	422
1958	29,065.31	24,267	24,374	4,691	11.96	392
1959	43,706.16	36,145	36,304	7,402	12.45	595
1960	43,752.12	35,833	35,991	7,761	12.93	600
1961	50,510.55	41,242	41,424	9,087	12.92	703
1962	50,613.83	40,896	41,076	9,538	13.43	710
1963	47,197.36	37,720	37,886	9,311	13.94	668
1964	17,792.60	14,158	14,220	3,573	13.99	255
1965	40,249.46	31,652	31,791	8,458	14.53	582
1966	44,126.16	34,286	34,437	9,689	15.07	643
1967	41,503.27	32,061	32,202	9,301	15.17	613
1968	26,513.09	20,219	20,308	6,205	15.72	395
1969	20,430.53	15,372	15,440	4,991	16.29	306

SUEZ WATER PENNSYLVANIA, INC.

ACCOUNT 333 SERVICES

CALCULATED REMAINING LIFE DEPRECIATION ACCRUAL
RELATED TO ORIGINAL COST AS OF DECEMBER 31, 2018

YEAR (1)	ORIGINAL COST (2)	CALCULATED ACCRUED (3)	ALLOC. BOOK RESERVE (4)	FUTURE BOOK ACCRUALS (5)	REM. LIFE (6)	ANNUAL ACCRUAL (7)
SURVIVOR CURVE.. IOWA 60-S2.5						
NET SALVAGE PERCENT.. 0						
1970	38,283.89	28,594	28,720	9,564	16.44	582
1971	71,882.13	52,920	53,153	18,729	17.02	1,100
1972	98,576.52	71,507	71,822	26,755	17.60	1,520
1973	141,474.28	101,069	101,514	39,960	18.19	2,197
1974	141,906.22	100,413	100,855	41,051	18.39	2,232
1975	114,439.82	79,650	80,001	34,439	19.00	1,813
1976	112,009.97	76,637	76,975	35,035	19.61	1,787
1977	149,418.23	100,454	100,896	48,522	20.23	2,399
1978	223,142.18	148,211	148,864	74,278	20.48	3,627
1979	223,751.19	145,841	146,483	77,268	21.10	3,662
1980	70,834.84	45,271	45,470	25,365	21.74	1,167
1981	157,714.10	98,761	99,196	58,518	22.38	2,615
1982	153,197.76	93,941	94,355	58,843	23.02	2,556
1983	180,270.75	108,162	108,638	71,633	23.67	3,026
1984	198,076.71	116,172	116,684	81,393	24.32	3,347
1985	359,216.37	205,759	206,665	152,551	24.98	6,107
1986	348,867.70	195,017	195,876	152,992	25.64	5,967
1987	589,424.46	321,236	322,651	266,773	26.30	10,143
1988	599,671.82	318,246	319,648	280,024	26.97	10,383
1989	465,553.53	240,319	241,377	224,177	27.65	8,108
1990	525,219.15	263,450	264,610	260,609	28.32	9,202
1991	546,880.34	266,221	267,393	279,487	28.99	9,641
1992	487,813.43	228,784	229,792	258,021	30.00	8,601
1993	623,556.91	283,032	284,278	339,279	30.68	11,059
1994	726,696.71	318,729	320,133	406,564	31.36	12,964
1995	674,286.17	283,605	284,854	389,432	32.37	12,031
1996	570,422.63	231,021	232,038	338,385	33.06	10,235
1997	535,909.35	207,397	208,310	327,599	34.06	9,618
1998	873,798.55	324,179	325,607	548,192	34.75	15,775
1999	932,013.08	329,001	330,450	601,563	35.75	16,827
2000	1,427,022.01	480,478	482,594	944,428	36.45	25,910
2001	1,205,174.58	383,848	385,538	819,637	37.45	21,886
2002	869,767.73	261,191	262,341	607,427	38.45	15,798
2003	830,650.23	235,572	236,610	594,040	39.15	15,173
2004	798,235.99	211,852	212,785	585,451	40.14	14,585
2005	633,613.30	156,502	157,191	476,422	41.15	11,578
2006	1,005,207.47	229,991	231,004	774,203	42.14	18,372
2007	1,387,649.25	291,961	293,247	1,094,402	43.15	25,363
2008	1,882,983.19	363,792	365,394	1,517,589	43.85	34,609
2009	1,302,434.07	227,665	228,668	1,073,766	44.85	23,941
2010	1,541,005.73	241,013	242,074	1,298,932	45.85	28,330
2011	1,622,325.73	223,881	224,867	1,397,459	46.85	29,828
2012	1,142,678.80	136,664	137,266	1,005,413	47.85	21,012

SUEZ WATER PENNSYLVANIA, INC.

ACCOUNT 333 SERVICES

CALCULATED REMAINING LIFE DEPRECIATION ACCRUAL
RELATED TO ORIGINAL COST AS OF DECEMBER 31, 2018

YEAR (1)	ORIGINAL COST (2)	CALCULATED ACCRUED (3)	ALLOC. BOOK RESERVE (4)	FUTURE BOOK ACCRUALS (5)	REM. LIFE (6)	ANNUAL ACCRUAL (7)
SURVIVOR CURVE.. IOWA 60-S2.5						
NET SALVAGE PERCENT.. 0						
2013	1,216,630.97	123,123	123,665	1,092,966	48.85	22,374
2014	2,300,460.14	190,478	191,317	2,109,143	49.85	42,310
2015	1,702,694.19	109,654	110,137	1,592,557	50.85	31,319
2016	2,875,712.20	132,283	132,866	2,742,846	51.85	52,900
2017	3,850,566.31	106,276	106,744	3,743,822	52.85	70,839
2018	1,115,667.03	10,264	10,309	1,105,358	53.85	20,527
	40,291,797.42	10,028,541	10,072,704	30,219,093		725,847
COMPOSITE REMAINING LIFE AND ANNUAL ACCRUAL RATE, PERCENT ..						41.6 1.80

SUEZ WATER PENNSYLVANIA, INC.

ACCOUNT 334 METERS

CALCULATED REMAINING LIFE DEPRECIATION ACCRUAL
RELATED TO ORIGINAL COST AS OF DECEMBER 31, 2018

YEAR (1)	ORIGINAL COST (2)	CALCULATED ACCRUED (3)	ALLOC. BOOK RESERVE (4)	FUTURE BOOK ACCRUALS (5)	REM. LIFE (6)	ANNUAL ACCRUAL (7)
SURVIVOR CURVE.. IOWA 25-S1.5						
NET SALVAGE PERCENT.. 0						
1997	29,683.14	21,888	21,517	8,166	7.66	1,066
1998	291,044.07	209,435	205,887	85,157	7.99	10,658
1999	318,246.03	222,772	218,998	99,248	8.36	11,872
2000	564,484.01	382,212	375,737	188,747	8.82	21,400
2001	346,417.94	226,731	222,890	123,528	9.24	13,369
2002	420,999.43	265,356	260,861	160,138	9.68	16,543
2003	298,800.16	181,073	178,006	120,794	10.08	11,984
2004	423,792.62	245,206	241,052	182,741	10.56	17,305
2005	251,388.92	138,113	135,773	115,616	11.07	10,444
2006	558,744.24	289,877	284,967	273,777	11.60	23,601
2007	1,348,383.33	655,854	644,744	703,639	12.14	57,960
2008	560,767.63	253,187	248,898	311,870	12.76	24,441
2009	317,027.78	131,915	129,680	187,348	13.33	14,055
2010	817,081.06	309,020	303,785	513,296	13.97	36,743
2011	1,060,625.45	359,552	353,461	707,164	14.62	48,370
2012	1,501,890.02	447,113	439,539	1,062,351	15.33	69,299
2013	2,182,954.56	557,090	547,653	1,635,302	16.05	101,888
2014	2,106,541.69	444,480	436,951	1,669,591	16.82	99,262
2015	3,075,920.03	509,372	500,744	2,575,176	17.64	145,985
2016	1,103,266.92	131,509	129,281	973,986	18.47	52,733
2017	1,187,180.40	85,477	84,030	1,103,150	19.33	57,069
2018	1,515,533.98	36,524	35,905	1,479,629	20.25	73,068
	20,280,773.41	6,103,756	6,000,359	14,280,414		919,115
COMPOSITE REMAINING LIFE AND ANNUAL ACCRUAL RATE, PERCENT ..						15.5 4.53

SUEZ WATER PENNSYLVANIA, INC.

ACCOUNT 335 HYDRANTS

CALCULATED REMAINING LIFE DEPRECIATION ACCRUAL
RELATED TO ORIGINAL COST AS OF DECEMBER 31, 2018

YEAR (1)	ORIGINAL COST (2)	CALCULATED ACCRUED (3)	ALLOC. BOOK RESERVE (4)	FUTURE BOOK ACCRUALS (5)	REM. LIFE (6)	ANNUAL ACCRUAL (7)
SURVIVOR CURVE.. IOWA 60-R4						
NET SALVAGE PERCENT.. 0						
1957	4,101.20	3,657	3,877	224	7.46	30
1958	10,239.74	9,045	9,588	652	7.99	82
1959	10,015.84	8,760	9,286	730	8.53	86
1960	12,899.65	11,169	11,839	1,061	9.07	117
1961	15,196.30	13,020	13,802	1,394	9.61	145
1962	10,471.59	8,934	9,470	1,002	9.72	103
1963	5,642.51	4,760	5,046	597	10.29	58
1964	28,335.81	23,626	25,044	3,292	10.86	303
1965	8,068.20	6,647	7,046	1,022	11.44	89
1966	17,566.71	14,296	15,154	2,413	12.01	201
1967	19,765.14	15,879	16,832	2,933	12.60	233
1968	14,973.42	11,871	12,584	2,389	13.20	181
1969	33,892.04	26,341	27,922	5,970	14.19	421
1970	29,151.19	22,339	23,680	5,471	14.79	370
1971	20,432.75	15,431	16,357	4,076	15.40	265
1972	23,702.18	17,634	18,693	5,009	16.00	313
1973	77,597.98	56,848	60,261	17,337	16.61	1,044
1974	52,075.52	37,541	39,795	12,281	17.23	713
1975	45,902.44	32,545	34,499	11,403	17.85	639
1976	69,661.89	48,554	51,469	18,193	18.48	984
1977	52,146.55	35,491	37,621	14,526	19.48	746
1978	83,449.99	55,761	59,108	24,342	20.11	1,210
1979	62,177.95	40,770	43,217	18,961	20.74	914
1980	50,850.16	32,697	34,660	16,190	21.38	757
1981	59,739.42	37,409	39,655	20,084	22.38	897
1982	43,691.92	26,792	28,400	15,292	23.02	664
1983	43,549.10	26,129	27,698	15,851	23.67	670
1984	62,774.71	36,598	38,795	23,980	24.67	972
1985	73,588.44	41,909	44,425	29,163	25.32	1,152
1986	120,340.80	66,488	70,479	49,862	26.32	1,894
1987	159,667.62	85,997	91,159	68,509	26.98	2,539
1988	142,439.57	74,296	78,756	63,684	27.98	2,276
1989	141,454.63	71,774	76,083	65,372	28.64	2,283
1990	153,958.46	75,470	80,000	73,958	29.64	2,495
1991	110,589.72	52,619	55,778	54,812	30.30	1,809
1992	80,412.92	36,861	39,074	41,339	31.31	1,320
1993	110,216.43	48,627	51,546	58,670	32.30	1,816
1994	124,280.33	52,981	56,161	68,119	32.97	2,066
1995	125,270.72	51,223	54,298	70,973	33.97	2,089
1996	117,986.61	46,192	48,965	69,022	34.97	1,974
1997	147,819.89	55,610	58,948	88,872	35.65	2,493
1998	154,225.83	55,336	58,658	95,568	36.64	2,608
1999	255,388.64	87,139	92,370	163,019	37.65	4,330

SUEZ WATER PENNSYLVANIA, INC.

ACCOUNT 335 HYDRANTS

CALCULATED REMAINING LIFE DEPRECIATION ACCRUAL
RELATED TO ORIGINAL COST AS OF DECEMBER 31, 2018

YEAR (1)	ORIGINAL COST (2)	CALCULATED ACCRUED (3)	ALLOC. BOOK RESERVE (4)	FUTURE BOOK ACCRUALS (5)	REM. LIFE (6)	ANNUAL ACCRUAL (7)
SURVIVOR CURVE.. IOWA 60-R4						
NET SALVAGE PERCENT.. 0						
2000	212,125.83	68,686	72,809	139,317	38.64	3,606
2001	217,922.00	67,120	71,149	146,773	39.32	3,733
2002	171,506.19	49,805	52,795	118,711	40.32	2,944
2003	200,665.89	54,742	58,028	142,638	41.32	3,452
2004	348,744.02	88,999	94,341	254,403	42.32	6,011
2005	184,072.34	43,736	46,361	137,711	43.32	3,179
2006	263,164.46	57,896	61,371	201,793	44.32	4,553
2007	131,976.91	26,712	28,316	103,661	45.32	2,287
2008	271,843.07	50,237	53,253	218,590	46.32	4,719
2009	289,045.62	48,617	51,535	237,511	46.99	5,055
2010	74,130.79	11,149	11,818	62,313	48.00	1,298
2011	252,603.98	33,546	35,560	217,044	48.99	4,430
2012	155,849.26	17,923	18,999	136,850	50.00	2,737
2013	173,311.58	16,881	17,894	155,418	50.99	3,048
2014	369,303.80	29,397	31,162	338,142	52.00	6,503
2015	180,988.09	11,221	11,895	169,093	52.99	3,191
2016	890,668.24	39,368	41,731	848,937	54.00	15,721
2017	317,811.84	8,454	8,961	308,851	54.99	5,616
2018	322,855.99	2,841	3,012	319,844	56.00	5,712
	8,014,302.41	2,310,396	2,449,088	5,565,214		134,146
COMPOSITE REMAINING LIFE AND ANNUAL ACCRUAL RATE, PERCENT ..						41.5 1.67

SUEZ WATER PENNSYLVANIA, INC.

ACCOUNT 339 OTHER PLANT AND MISCELLANEOUS EQUIPMENT

CALCULATED REMAINING LIFE DEPRECIATION ACCRUAL
RELATED TO ORIGINAL COST AS OF DECEMBER 31, 2018

YEAR (1)	ORIGINAL COST (2)	CALCULATED ACCRUED (3)	ALLOC. BOOK RESERVE (4)	FUTURE BOOK ACCRUALS (5)	REM. LIFE (6)	ANNUAL ACCRUAL (7)
SURVIVOR CURVE.. IOWA 40-S2						
NET SALVAGE PERCENT.. 0						
1998	495,159.29	263,920	359,497	135,662	17.96	7,554
2002	8,243.48	3,672	5,002	3,241	20.54	158
2006	5,665.96	1,962	2,672	2,994	23.60	127
2007	10,176.78	3,265	4,447	5,730	24.34	235
2008	5,242.31	1,541	2,099	3,143	25.21	125
2009	13,242.00	3,536	4,817	8,425	26.09	323
2012	42.00	8	11	31	28.83	1
2014	949.29	121	165	784	30.71	26
2015	534.38	53	72	462	31.71	15
	539,255.49	278,078	378,782	160,473		8,564

COMPOSITE REMAINING LIFE AND ANNUAL ACCRUAL RATE, PERCENT .. 18.7 1.59

SUEZ WATER PENNSYLVANIA, INC.

ACCOUNT 340.1 OFFICE FURNITURE AND EQUIPMENT - COMPUTERS AND SOFTWARE

CALCULATED REMAINING LIFE DEPRECIATION ACCRUAL
RELATED TO ORIGINAL COST AS OF DECEMBER 31, 2018

YEAR (1)	ORIGINAL COST (2)	CALCULATED ACCRUED (3)	ALLOC. BOOK RESERVE (4)	FUTURE BOOK ACCRUALS (5)	REM. LIFE (6)	ANNUAL ACCRUAL (7)
SURVIVOR CURVE.. 5-SQUARE						
NET SALVAGE PERCENT.. 0						
2005	651,048.90	651,049	651,049			
2006	1,546.53	1,547	1,547			
2007	95,995.46	95,995	95,995			
2008	23,621.82	23,622	23,622			
2009	358,158.29	358,158	358,158			
2010	363,305.77	363,306	363,306			
2011	142,917.12	142,917	142,917			
2012	398,051.12	398,051	398,051			
2013	640,720.93	640,721	640,721			
2014	218,590.38	196,731	139,219	79,371	0.50	79,371
2015	290,868.45	203,608	144,085	146,783	1.50	97,855
2016	108,253.60	54,127	38,304	69,950	2.50	27,980
2017	5,697.74	1,709	1,209	4,489	3.50	1,283
	3,298,776.11	3,131,541	2,998,183	300,593		206,489
COMPOSITE REMAINING LIFE AND ANNUAL ACCRUAL RATE, PERCENT ..						1.5 6.26

SUEZ WATER PENNSYLVANIA, INC.

ACCOUNT 340.11 SOFTWARE - LARGE

CALCULATED REMAINING LIFE DEPRECIATION ACCRUAL
RELATED TO ORIGINAL COST AS OF DECEMBER 31, 2018

YEAR (1)	ORIGINAL COST (2)	CALCULATED ACCRUED (3)	ALLOC. BOOK RESERVE (4)	FUTURE BOOK ACCRUALS (5)	REM. LIFE (6)	ANNUAL ACCRUAL (7)
SURVIVOR CURVE.. 8-SQUARE						
NET SALVAGE PERCENT.. 0						
2011	3,577,604.00	3,354,004	3,323,704	253,900	0.50	253,900
2012	87,975.00	71,480	70,834	17,141	1.50	11,427
	3,665,579.00	3,425,484	3,394,538	271,041		265,327
COMPOSITE REMAINING LIFE AND ANNUAL ACCRUAL RATE, PERCENT .. 1.0						7.24

SUEZ WATER PENNSYLVANIA, INC.

ACCOUNT 340.2 OFFICE FURNITURE AND EQUIPMENT - FURNITURE

CALCULATED REMAINING LIFE DEPRECIATION ACCRUAL
RELATED TO ORIGINAL COST AS OF DECEMBER 31, 2018

YEAR (1)	ORIGINAL COST (2)	CALCULATED ACCRUED (3)	ALLOC. BOOK RESERVE (4)	FUTURE BOOK ACCRUALS (5)	REM. LIFE (6)	ANNUAL ACCRUAL (7)
SURVIVOR CURVE.. 15-SQUARE						
NET SALVAGE PERCENT.. 0						
2012	69,239.46	30,004	52,303	16,936	8.50	1,992
2013	91,981.10	33,727	58,793	33,188	9.50	3,493
2014	25,432.74	7,630	13,301	12,132	10.50	1,155
2015	78,307.87	18,272	31,852	46,456	11.50	4,040
2016	394,170.94	65,696	114,522	279,649	12.50	22,372
2017	313.99	31	54	260	13.50	19
	659,446.10	155,360	270,825	388,621		33,071

COMPOSITE REMAINING LIFE AND ANNUAL ACCRUAL RATE, PERCENT .. 11.8 5.01

SUEZ WATER PENNSYLVANIA, INC.

ACCOUNT 341 TRANSPORTATION EQUIPMENT - TRUCKS

CALCULATED REMAINING LIFE DEPRECIATION ACCRUAL
RELATED TO ORIGINAL COST AS OF DECEMBER 31, 2018

YEAR (1)	ORIGINAL COST (2)	CALCULATED ACCRUED (3)	ALLOC. BOOK RESERVE (4)	FUTURE BOOK ACCRUALS (5)	REM. LIFE (6)	ANNUAL ACCRUAL (7)
SURVIVOR CURVE.. IOWA 7-L3						
NET SALVAGE PERCENT.. 0						
2015	1,057.45	562	275	782	3.08	254
	1,057.45	562	275	782		254
COMPOSITE REMAINING LIFE AND ANNUAL ACCRUAL RATE, PERCENT ..					3.1	24.02

SUEZ WATER PENNSYLVANIA, INC.

ACCOUNT 343.1 SHOP AND GARAGE EQUIPMENT

CALCULATED REMAINING LIFE DEPRECIATION ACCRUAL
RELATED TO ORIGINAL COST AS OF DECEMBER 31, 2018

YEAR (1)	ORIGINAL COST (2)	CALCULATED ACCRUED (3)	ALLOC. BOOK RESERVE (4)	FUTURE BOOK ACCRUALS (5)	REM. LIFE (6)	ANNUAL ACCRUAL (7)
SURVIVOR CURVE.. 20-SQUARE						
NET SALVAGE PERCENT.. 0						
2009	15,026.77	7,138	10,383	4,644	10.50	442
2010	202,534.12	86,077	125,212	77,322	11.50	6,724
2011	117,960.29	44,235	64,347	53,613	12.50	4,289
2012	91,515.86	29,743	43,266	48,250	13.50	3,574
2013	56,571.73	15,557	22,630	33,942	14.50	2,341
2014	44,556.49	10,025	14,583	29,973	15.50	1,934
2015	235,467.55	41,207	59,942	175,526	16.50	10,638
2017	6,796.31	510	742	6,054	18.50	327
2018	370,163.82	9,254	13,461	356,703	19.50	18,292
	1,140,592.94	243,746	354,566	786,027		48,561
COMPOSITE REMAINING LIFE AND ANNUAL ACCRUAL RATE, PERCENT ..						16.2 4.26

SUEZ WATER PENNSYLVANIA, INC.

ACCOUNT 343.2 TOOLS AND WORK EQUIPMENT

CALCULATED REMAINING LIFE DEPRECIATION ACCRUAL
RELATED TO ORIGINAL COST AS OF DECEMBER 31, 2018

YEAR (1)	ORIGINAL COST (2)	CALCULATED ACCRUED (3)	ALLOC. BOOK RESERVE (4)	FUTURE BOOK ACCRUALS (5)	REM. LIFE (6)	ANNUAL ACCRUAL (7)
SURVIVOR CURVE.. 20-SQUARE						
NET SALVAGE PERCENT.. 0						
1994	5,235.00	5,235	5,235			
1995	5,966.43	5,966	5,966			
1996	91,022.00	91,022	91,022			
1997	15,718.06	15,718	15,718			
1998	18,091.90	18,092	18,092			
1999	19,809.02	19,314	17,711	2,098	0.50	2,098
2000	53,752.16	49,721	45,594	8,158	1.50	5,439
2001	68,425.83	59,873	54,904	13,522	2.50	5,409
2002	6,229.70	5,140	4,713	1,517	3.50	433
2003	32,202.15	24,957	22,886	9,316	4.50	2,070
2004	25,375.57	18,397	16,870	8,506	5.50	1,547
2005	22,252.82	15,021	13,774	8,479	6.50	1,304
2006	81,045.92	50,654	46,450	34,596	7.50	4,613
2007	37,352.90	21,478	19,696	17,657	8.50	2,077
2008	20,599.96	10,815	9,917	10,683	9.50	1,125
2009	87,917.51	41,761	38,295	49,623	10.50	4,726
2010	81,808.70	34,769	31,883	49,926	11.50	4,341
2011	16,643.56	6,241	5,723	10,921	12.50	874
2012	6,874.79	2,234	2,049	4,826	13.50	357
2013	41,688.59	11,464	10,513	31,176	14.50	2,150
2014	414,116.79	93,176	85,443	328,674	15.50	21,205
2015	568,666.54	99,517	91,258	477,409	16.50	28,934
2016	84,012.51	10,502	9,630	74,383	17.50	4,250
2017	151,381.77	11,354	10,412	140,970	18.50	7,620
2018	108,011.33	2,700	2,476	105,535	19.50	5,412
	2,064,201.51	725,121	676,230	1,387,972		105,984

COMPOSITE REMAINING LIFE AND ANNUAL ACCRUAL RATE, PERCENT .. 13.1 5.13

SUEZ WATER PENNSYLVANIA, INC.

ACCOUNT 344 LABORATORY EQUIPMENT

CALCULATED REMAINING LIFE DEPRECIATION ACCRUAL
RELATED TO ORIGINAL COST AS OF DECEMBER 31, 2018

YEAR (1)	ORIGINAL COST (2)	CALCULATED ACCRUED (3)	ALLOC. BOOK RESERVE (4)	FUTURE BOOK ACCRUALS (5)	REM. LIFE (6)	ANNUAL ACCRUAL (7)
SURVIVOR CURVE.. 15-SQUARE						
NET SALVAGE PERCENT.. 0						
1995	1,912.00	1,912	1,912			
1996	8,583.00	8,583	8,583			
1998	1,877.41	1,877	1,877			
2000	4,245.39	4,245	4,245			
2006	37,970.96	31,642	36,670	1,301	2.50	520
2007	342.41	263	305	37	3.50	11
2008	4,473.90	3,132	3,630	844	4.50	188
2009	4,348.00	2,754	3,191	1,157	5.50	210
2010	15,016.00	8,509	9,861	5,155	6.50	793
2011	17,500.35	8,750	10,140	7,360	7.50	981
2012	3,118.00	1,351	1,566	1,552	8.50	183
2013	808.00	296	343	465	9.50	49
2014	3,062.10	919	1,065	1,997	10.50	190
2015	25,067.71	5,849	6,778	18,290	11.50	1,590
2017	954.48	95	110	844	13.50	63
	129,279.71	80,177	90,276	39,004		4,778

COMPOSITE REMAINING LIFE AND ANNUAL ACCRUAL RATE, PERCENT .. 8.2 3.70

SUEZ WATER PENNSYLVANIA, INC.

ACCOUNT 346 COMMUNICATION EQUIPMENT

CALCULATED REMAINING LIFE DEPRECIATION ACCRUAL
RELATED TO ORIGINAL COST AS OF DECEMBER 31, 2018

YEAR (1)	ORIGINAL COST (2)	CALCULATED ACCRUED (3)	ALLOC. BOOK RESERVE (4)	FUTURE BOOK ACCRUALS (5)	REM. LIFE (6)	ANNUAL ACCRUAL (7)
SURVIVOR CURVE.. 10-SQUARE						
NET SALVAGE PERCENT.. 0						
2001	95,901.80	95,902	95,902			
2002	207,677.81	207,678	207,678			
2003	4,590.34	4,590	4,590			
2004	4,695.24	4,695	4,695			
2005	1,098,324.62	1,098,325	1,098,325			
2006	31,869.67	31,870	31,870			
2007	46,725.91	46,726	46,726			
2008	73,322.61	73,323	73,323			
2009	270,709.32	257,174	237,220	33,489	0.50	33,489
2010	224,025.86	190,422	175,647	48,379	1.50	32,253
2011	26,630.92	19,973	18,423	8,208	2.50	3,283
2012	365,125.89	237,332	218,917	146,209	3.50	41,774
2013	203,363.64	111,850	103,172	100,192	4.50	22,265
2014	463,764.62	208,694	192,502	271,263	5.50	49,321
2015	311,617.76	109,066	100,604	211,014	6.50	32,464
2016	3,218,317.13	804,579	742,151	2,476,166	7.50	330,155
2017	81,275.96	12,191	11,245	70,031	8.50	8,239
2018	198,020.77	9,901	9,133	188,888	9.50	19,883
	6,925,959.87	3,524,291	3,372,123	3,553,837		573,126

COMPOSITE REMAINING LIFE AND ANNUAL ACCRUAL RATE, PERCENT .. 6.2 8.28

SUEZ WATER PENNSYLVANIA, INC.

ACCOUNT 347 MISCELLANEOUS EQUIPMENT

CALCULATED REMAINING LIFE DEPRECIATION ACCRUAL
RELATED TO ORIGINAL COST AS OF DECEMBER 31, 2018

YEAR (1)	ORIGINAL COST (2)	CALCULATED ACCRUED (3)	ALLOC. BOOK RESERVE (4)	FUTURE BOOK ACCRUALS (5)	REM. LIFE (6)	ANNUAL ACCRUAL (7)
SURVIVOR CURVE.. 15-SQUARE						
NET SALVAGE PERCENT.. 0						
2004	2,697.00	2,607	2,187	510	0.50	510
2005	2,825.83	2,543	2,134	692	1.50	461
2010	12,555.23	7,115	5,970	6,585	6.50	1,013
2011	2,106.83	1,053	883	1,224	7.50	163
2013	3,300.51	1,210	1,015	2,286	9.50	241
2015	21,945.51	5,121	4,297	17,649	11.50	1,535
2016	77,842.71	12,974	10,886	66,957	12.50	5,357
2017	24,580.48	2,458	2,062	22,518	13.50	1,668
	147,854.10	35,081	29,434	118,420		10,948

COMPOSITE REMAINING LIFE AND ANNUAL ACCRUAL RATE, PERCENT .. 10.8 7.40

**PART VIII. EXPERIENCED AND ESTIMATED
NET SALVAGE**

SUEZ WATER PENNSYLVANIA, INC.

EXPERIENCED RETIREMENTS BY ACCOUNT AND ASSOCIATED
COST OF REMOVAL, GROSS SALVAGE, AND NET SALVAGE

ACCT	REGULAR RETIREMENTS	COST OF REMOVAL	GROSS SALVAGE	NET SALVAGE
2014 TRANSACTION YEAR				
304.20	4,312.30	250.00		250.00-
304.30	44,116.16	814.89		814.89-
304.51	7,387.96			
306.00	7,188.00	1,173.08		1,173.08-
307.00	5,029.83	18,327.52		18,327.52-
311.20	142,206.21	11,305.75		11,305.75-
320.10	116,746.64	22,903.49		22,903.49-
320.30	16,573.21	249.94		249.94-
330.00	789.24			
331.00	128,159.00	22,514.05		22,514.05-
333.00	34,279.98	7,671.94		7,671.94-
334.00	363,410.57	156,295.79	47,216.50	109,079.29-
335.00	1,546.52	495.22	408.70-	903.92-
340.10	22,081.79			
343.20	70,784.33			
346.00	210,225.13			
	1,174,836.87	242,001.67	46,807.80	195,193.87-
2015 TRANSACTION YEAR				
303.00	50,000.00	31,870.00		31,870.00-
304.20	34,639.57	990.70		990.70-
304.30	35,446.31	6,690.00		6,690.00-
304.51	4,082.76			
306.00	11,391.94			
307.00	19,975.32	2,450.00		2,450.00-
311.20	311,207.13	15,818.19		15,818.19-
320.10	34,839.68	277.81		277.81-
320.30	442,790.10	28,976.39		28,976.39-
330.00	203,288.06	188.67		188.67-
331.00	137,544.98	64,377.56		64,377.56-
333.00	23,853.16	11,224.85		11,224.85-
334.00	233,571.57	202,893.71	14,105.00	188,788.71-
335.00	6,512.74	2,330.16	4,271.68	1,941.52
340.10	2,330,409.50			
343.20	103,130.33			
346.00	1,039,972.04	2,032.28		2,032.28-
	5,022,655.19	370,120.32	18,376.68	351,743.64-

SUEZ WATER PENNSYLVANIA, INC.

EXPERIENCED RETIREMENTS BY ACCOUNT AND ASSOCIATED
COST OF REMOVAL, GROSS SALVAGE, AND NET SALVAGE

ACCT	REGULAR RETIREMENTS	COST OF REMOVAL	GROSS SALVAGE	NET SALVAGE
2016 TRANSACTION YEAR				
304.20	122,296.85	392.43		392.43-
304.30	432,146.41	3,490.94		3,490.94-
304.51	63,471.63			
306.00	43,080.34			
307.00	3,455.44			
311.20	348,953.52	19,218.04		19,218.04-
320.10	111,726.52	21.90		21.90-
320.30	445,167.27	23,238.73		23,238.73-
330.00	196,334.42	13,273.33		13,273.33-
331.00	248,153.98	194,519.10		194,519.10-
333.00	64,297.16	33,370.79		33,370.79-
334.00	912,384.96	78,538.97-	5,350.75	83,889.72
335.00	12,086.80	3,610.97	2,452.58	1,158.39-
340.10	24,300.61	98.25		98.25-
340.20		47.19		47.19-
343.10	5,362.87			
343.20	1,443.98			
346.00	213,640.68	786.09		786.09-
	3,248,303.44	213,528.79	7,803.33	205,725.46-
2017 TRANSACTION YEAR				
304.20	21,421.47	82.06		82.06-
304.30	7,552.57	8,379.82		8,379.82-
304.51	2,000.00			
304.52	75,000.00			
304.53	800.00			
306.00	2,080.00			
307.00	6,000.00			
311.20	166,204.09	3,724.95		3,724.95-
320.10	73,911.78	501.26		501.26-
320.30	58,663.19	23,442.19		23,442.19-
330.00	54,640.00	11,261.80		11,261.80-
331.00	1,018,780.44	237,069.34		237,069.34-
333.00	132,871.27	42,620.10		42,620.10-
334.00	326,155.31	6,257.51-	13,554.00	19,811.51
335.00	24,266.42	2,742.08	902.80	1,839.28-
340.10	65,629.33			
343.10	887.78			
343.20	20,293.39			
346.00	118,958.84	1,796.26		1,796.26-
	2,176,115.88	325,362.35	14,456.80	310,905.55-

SUEZ WATER PENNSYLVANIA, INC.

EXPERIENCED RETIREMENTS BY ACCOUNT AND ASSOCIATED
COST OF REMOVAL, GROSS SALVAGE, AND NET SALVAGE

ACCT	REGULAR RETIREMENTS	COST OF REMOVAL	GROSS SALVAGE	NET SALVAGE
2018 TRANSACTION YEAR				
304.51	20,800.00	6,400.00		6,400.00-
304.52	36,400.00	11,200.00		11,200.00-
304.53	7,800.00	2,400.00		2,400.00-
311.20	90,000.00	43,500.00		43,500.00-
320.10	25,000.00	5,000.00		5,000.00-
320.30	50,000.00	15,000.00		15,000.00-
330.00	100,000.00	55,000.00		55,000.00-
331.00	280,000.00	103,750.00		103,750.00-
333.00	22,000.00	1,800.00		1,800.00-
334.00	70,000.00	18,000.00		18,000.00-
335.00	5,000.00	400.00		400.00-
340.10	162,368.14			
343.20	114,315.57			
346.00	106,088.56	3,000.00		3,000.00-
	1,089,772.27	265,450.00		265,450.00-
TOTAL	12,711,683.65	1,416,463.13	87,444.61	1,329,018.52-



2019 DEPRECIATION STUDY

**CALCULATED ANNUAL DEPRECIATION
ACCRUALS RELATED TO WATER PLANT
AS OF DECEMBER 31, 2019**

Prepared by:



Excellence Delivered As Promised

SUEZ WATER PENNSYLVANIA INC.
Harrisburg, Pennsylvania

2019 DEPRECIATION STUDY

CALCULATED ANNUAL DEPRECIATION ACCRUALS
RELATED TO WATER PLANT
AS OF DECEMBER 31, 2019

GANNETT FLEMING VALUATION AND RATE CONSULTANTS, LLC
Camp Hill, Pennsylvania



Excellence Delivered As Promised

April 20, 2018

SUEZ Water Pennsylvania Inc.
4211 E. Park Circle
Harrisburg, PA 17111

Attention Mr. John D. Hollenbach
Vice President, Mid Atlantic Division

Ladies and Gentlemen:

Pursuant to your request, we have determined the annual depreciation accruals applicable to water plant as of December 31, 2019. The results of our study as of December 31, 2018 are presented in our report titled "2018 Depreciation Study - Calculated Annual Depreciation Accruals Related to Water Plant as of December 31, 2018". The same methods, procedures and estimates are used in both studies.

The attached report sets forth a description of the methods and procedures upon which the studies were based, the estimates of survivor curves and the calculated annual depreciation rates as of December 31, 2019.

Respectfully submitted,

GANNETT FLEMING VALUATION
AND RATE CONSULTANTS, LLC

A handwritten signature in black ink that reads "John J. Spanos".

JOHN J. SPANOS
Sr. Vice President

JJS:mle

063817.100

Gannett Fleming Valuation and Rate Consultants, LLC

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PART I. RESULTS OF STUDY

**SUEZ WATER PENNSYLVANIA INC.
DEPRECIATION STUDY**

PART I. RESULTS OF STUDY

DESCRIPTION OF SUMMARY TABULATIONS

Tables 1 through 4 presented on pages I-3 through I-7 summarize the results of the depreciation study as of December 31, 2019. Table 1 sets forth, by depreciable group, the estimated survivor curve, original cost, book depreciation reserve as of December 31, 2019, future book accruals, calculated annual accrual amount and rate, and composite remaining life for plant in service. Table 2 presents the bringforward of the book reserve to December 31, 2019. Table 3 sets forth the calculations of the depreciation accruals for the twelve months ended December 31, 2019. Table 4 presents the annual amortization of experienced and estimated net salvage based on the period 2015 through 2019.

DESCRIPTION OF DETAILED TABULATIONS

The supporting data for the depreciation calculations are presented in account sequence in the section beginning on page II-8. The original cost, calculated accrued depreciation, allocated book reserve, future accruals, remaining life and annual accrual are shown for each vintage of each account or subaccount. The amounts of regular retirements, gross salvage and cost of removal are set forth by account for the years 2015 through 2019, beginning on pages III-2 through III-4.



SUEZ WATER PENNSYLVANIA, INC.

TABLE 1. SUMMARY OF ESTIMATED SURVIVOR CURVES, ORIGINAL COST, BOOK RESERVE AND CALCULATED ANNUAL DEPRECIATION ACCRUALS RELATED TO WATER PLANT AS OF DECEMBER 31, 2019

DEPRECIABLE GROUP (1)	SURVIVOR CURVE (2)	ORIGINAL COST (3)	BOOK RESERVE (4)	FUTURE ACCRUALS (5)	ANNUAL		COMPOSITE REMAINING LIFE (8)	
					ACCRUAL AMOUNT (6)	ACCRUAL RATE (7)=(6)/(3)		
INTANGIBLE PLANT								
301.00	ORGANIZATION	66,399.00	152,179					
302.00	FRANCHISES AND CONSENTS	64,265.56						
303.00	MISCELLANEOUS INTANGIBLE PLANT	4,429,099.01	(130,715)					
	TOTAL INTANGIBLE PLANT	4,559,763.57	21,464					
DEPRECIABLE PLANT								
STRUCTURES AND IMPROVEMENTS								
304.20	PUMPING	55-R2	3,721,078.15	1,038,181	2,682,897	82,531	2.22	32.5
304.30	WATER TREATMENT PLANT							
	BLOOMSBURG TREATMENT PLANT	55-S1.5 *	181,380.86	121,462	59,919	8,185	4.51	7.3
	BLOOMSBURG TREATMENT PLANT - NEW	55-S1.5 *	5,829,778.36	429,119	5,400,659	135,084	2.32	40.0
	SIXTH STREET PLANT	55-S1.5 *	4,160,026.78	1,715,268	2,444,759	113,621	2.73	21.5
	RICHARD C. RABOLD	55-S1.5 *	1,619,181.24	859,750	759,431	40,356	2.49	18.8
	MARKET STREET	55-S1.5 *	101,359.72	82,692	18,668	4,432	4.37	4.2
	OLD HUMMELSTOWN PLANT	55-S1.5 *	86,583.70	86,584	0	0		
	HUMMELSTOWN MEMBRANE PLANT	55-S1.5 *	4,410,545.60	1,235,045	3,175,501	104,571	2.37	30.4
	OTHER TREATMENT FACILITIES	50-R3	3,093,200.07	559,316	2,533,884	70,447	2.28	36.0
	TOTAL WATER TREATMENT PLANT		19,482,056.33	5,089,236	14,392,821	476,696	2.45	30.2
304.40	TRANSMISSION AND DISTRIBUTION	40-R3	419,271.11	31,008	388,263	12,150	2.90	32.0
304.51	OFFICES							
	BLOOMSBURG TREATMENT PLANT	55-S1.5 *	9,243,292.21	671,672	8,571,620	213,998	2.32	40.1
	OTHER OFFICES	45-R2.5	901,876.60	234,777	667,100	23,413	2.60	28.5
	TOTAL OFFICES		10,145,168.81	906,449	9,238,720	237,411	2.34	38.9
304.52	STORES, SHOP AND GARAGE							
	SUMMIT VIEW MAINTENANCE BUILDING	60-S0.5 *	3,796,397.30	521,667	3,274,730	155,349	4.09	21.1
	OTHER MAINTENANCE BUILDINGS	35-S2.5 *	539,833.39	103,287	436,546	19,010	3.52	23.0
	TOTAL ACCOUNT STORES, SHOP AND GARAGE		4,336,230.69	624,954	3,711,276	174,359	4.02	21.3
304.53	MISCELLANEOUS	25-S2	351,471.62	182,461	169,011	16,055	4.57	10.5
	TOTAL STRUCTURES AND IMPROVEMENTS		38,455,276.71	7,872,289	30,582,988	999,202	2.60	30.6
305.00	COLLECTING AND IMPOUNDING RESERVOIRS	65-S1	434,632.39	115,869	318,763	7,983	1.84	39.9
306.00	LAKE, RIVER AND OTHER INTAKES							
	ROCKVILLE INTAKE	65-R2.5 *	4,662,260.11	685,138	3,977,122	166,366	3.57	23.9
	HUMMELSTOWN INTAKE	65-R2.5 *	1,335,191.80	317,516	1,017,676	29,235	2.19	34.8
	OTHER INTAKES	50-S1	509,724.53	83,586	426,139	13,184	2.59	32.3
	TOTAL LAKE, RIVER AND OTHER INTAKES		6,507,176.44	1,086,240	5,420,937	208,785	3.21	26.0



SUEZ WATER PENNSYLVANIA, INC.

TABLE 1. SUMMARY OF ESTIMATED SURVIVOR CURVES, ORIGINAL COST, BOOK RESERVE AND CALCULATED ANNUAL DEPRECIATION ACCRUALS RELATED TO WATER PLANT AS OF DECEMBER 31, 2019

DEPRECIABLE GROUP (1)	SURVIVOR CURVE (2)	ORIGINAL COST (3)	BOOK RESERVE (4)	FUTURE ACCRUALS (5)	ANNUAL		COMPOSITE REMAINING LIFE (8)	
					ACCRUAL AMOUNT (6)	ACCRUAL RATE (7)=(6)/(3)		
307.00	WELLS AND SPRINGS	48-R2	1,028,041.81	545,289	482,753	17,514	1.70	27.6
308.00	INFILTRATION GALLERIES AND TUNNELS	40-R2.5	13,358.04	2,857	10,501	400	2.99	26.3
PUMPING EQUIPMENT								
311.20	ELECTRIC PUMPING EQUIPMENT	36-R0.5	16,307,072.06	5,224,981	11,082,091	583,227	3.58	19.0
311.30	OIL ENGINE PUMPING EQUIPMENT	35-R2	314,155.59	254,820	59,336	3,833	1.22	15.5
TOTAL PUMPING EQUIPMENT			16,621,227.65	5,479,801	11,141,427	587,060	3.53	19.0
WATER TREATMENT PLANT								
320.10	STRUCTURES AND IMPROVEMENTS							
	BLOOMSBURG TREATMENT PLANT	50-R1.5	338,354.21	328,623	9,731	1,217	0.36	8.0
	BLOOMSBURG TREATMENT PLANT - NEW	50-R1.5	13,979,069.61	1,705,396	12,273,674	393,097	2.81	31.2
	SIXTH STREET PLANT	50-R1.5	10,675,645.55	6,119,551	4,556,095	220,695	2.07	20.6
	RICHARD C. RABOLD	50-R1.5	1,756,585.15	1,226,980	529,605	27,972	1.59	18.9
	MARKET STREET	50-R1.5	192,621.85	177,020	15,602	3,522	1.83	4.4
	OLD HUMMELSTOWN PLANT	50-R1.5	858,433.64	858,434	0	0	-	-
	HUMMELSTOWN MEMBRANE PLANT	50-R1.5	9,469,382.38	3,882,531	5,586,851	198,547	2.10	28.1
	OTHER TREATMENT FACILITIES	40-R1.5	892,814.19	498,465	394,349	16,326	1.83	24.2
TOTAL STRUCTURES AND IMPROVEMENTS			38,162,906.58	14,797,000	23,365,907	861,376	2.26	27.1
320.20	PAINTING	10-SQ	447,524.82	262,662	184,863	39,209	8.76	4.7
320.30	CHEMICAL EQUIPMENT	25-S0.5	8,436,076.94	1,197,295	7,238,782	572,150	6.78	12.7
TOTAL WATER TREATMENT PLANT			47,046,508.34	16,256,957	30,789,552	1,472,735	3.13	20.9
330.00	DISTRIBUTION RESERVOIRS AND STANDPIPES	45-R1.5	13,813,043.79	3,680,088	10,132,956	385,353	2.79	26.3
331.00	TRANSMISSION AND DISTRIBUTION MAINS	80-R3	192,092,452.47	17,895,858	174,196,594	2,992,182	1.56	58.2
333.00	SERVICES	60-S2.5	41,020,732.30	10,799,668	30,221,064	736,362	1.80	41.0
334.00	METERS	25-S1.5	21,503,128.88	6,960,056	14,543,073	955,415	4.44	15.2
335.00	HYDRANTS	60-R4	8,108,690.83	2,578,680	5,530,011	135,573	1.67	40.8
339.00	OTHER PLANT AND MISCELLANEOUS EQUIPMENT	40-S2	539,255.49	387,356	151,899	8,424	1.56	18.0
OFFICE FURNITURE AND EQUIPMENT								
340.10	COMPUTERS AND SOFTWARE	5-SQ	2,646,180.68	2,550,409	95,772	80,752	3.05	1.2
340.11	SOFTWARE - LARGE	8-SQ	3,665,579.00	3,659,926	5,653	5,653	0.15	1.0
340.20	FURNITURE	15-SQ	659,446.10	303,872	355,574	33,197	5.03	10.7
TOTAL OFFICE FURNITURE AND EQUIPMENT			6,971,205.78	6,514,207	456,999	119,602	1.72	3.8
341.00	TRANSPORTATION EQUIPMENT - TRUCKS	7-L3	1,057.45	529	528	215	20.33	2.5
TOOLS, SHOP AND GARAGE EQUIPMENT								
343.10	SHOP AND GARAGE EQUIPMENT	20-SQ	1,140,592.94	403,155	737,438	48,767	4.28	15.1
343.20	TOOLS AND WORK EQUIPMENT	20-SQ	2,185,518.00	773,731	1,411,787	109,759	5.02	12.9
TOTAL TOOLS SHOP AND GARAGE EQUIPMENT			3,326,110.94	1,176,886	2,149,225	158,526	4.77	13.6



SUEZ WATER PENNSYLVANIA, INC.

TABLE 1. SUMMARY OF ESTIMATED SURVIVOR CURVES, ORIGINAL COST, BOOK RESERVE AND CALCULATED ANNUAL DEPRECIATION ACCRUALS RELATED TO WATER PLANT AS OF DECEMBER 31, 2019

DEPRECIABLE GROUP (1)	SURVIVOR CURVE (2)	ORIGINAL COST (3)	BOOK RESERVE (4)	FUTURE ACCRUALS (5)	ANNUAL		COMPOSITE REMAINING LIFE (8)	
					ACCRUAL AMOUNT (6)	ACCRUAL RATE (7)=(6)/(3)		
344.00	LABORATORY EQUIPMENT	15-SQ	127,367.71	93,144	34,224	4,514	3.54	7.6
346.00	COMMUNICATION EQUIPMENT	10-SQ	7,073,007.59	3,853,331	3,219,677	553,841	7.83	5.8
347.00	MISCELLANEOUS EQUIPMENT	15-SQ	147,854.10	40,375	107,479	10,332	6.99	10.4
TOTAL DEPRECIABLE PLANT			404,830,128.71	85,339,480	319,490,650	9,354,018	2.31	34.2
AMORTIZATION OF NET SALVAGE						319,853		
TOTAL UTILITY PLANT IN SERVICE			409,389,892.28	85,360,944	319,490,650	9,673,871		

* Life Span Procedure was used. Curve shown is Interim Survivor Curve.

SUEZ WATER PENNSYLVANIA, INC.

TABLE 2. BRINGFORWARD TO DECEMBER 31, 2019 OF BOOK RESERVE AS OF DECEMBER 31, 2018

ACCOUNT (1)	BOOK RESERVE AS OF DECEMBER 31, 2018 (2)	+	PROJECTED DEPRECIATION ACCRUALS (3)	-	PROJECTED RETIREMENTS (4)	-	PROJECTED COST OF REMOVAL (5)	+	PROJECTED GROSS SALVAGE (6)	+	ADJUSTMENTS (7)	=	PROJECTED BOOK RESERVE AS OF DECEMBER 31, 2019 (8)	BOOK RESERVE AS A PERCENT OF ORIGINAL COST (9)
301.00	152,179												152,179	229.19
303.00	(137,089)		6,374										(130,715)	(2.95)
304.20	953,370		84,811										1,038,181	27.90
304.30	4,606,102		483,134										5,089,236	26.12
304.40	18,681		12,327										31,008	7.40
304.51	698,570		235,079		20,800		6,400						906,449	8.93
304.52	612,699		59,855		36,400		11,200						624,954	14.41
304.53	175,842		16,819		7,800		2,400						182,461	51.91
305.00	107,698		8,171										115,869	26.66
306.00	1,139,448		76,792		90,000		40,000						1,086,240	16.69
307.00	523,039		22,250										545,289	53.04
308.00	2,447		410										2,857	21.39
311.20	4,918,291		555,190		195,000		53,500						5,224,981	32.04
311.30	250,830		3,990										254,820	81.11
320.10	14,038,837		873,163		85,000		30,000						14,797,000	38.77
320.20	223,414		39,248										262,662	58.69
320.30	829,671		532,624		125,000		40,000						1,197,295	14.19
330.00	3,471,829		328,259		75,000		45,000						3,680,088	26.64
331.00	15,943,779		2,860,829		680,000		228,750						17,895,858	9.32
333.00	10,072,704		750,764		22,000		1,800						10,799,668	26.33
334.00	6,000,359		982,697		20,000		3,000						6,960,056	32.37
335.00	2,449,088		134,992		5,000		400						2,578,680	31.80
339.00	378,782		8,574										387,356	71.83
340.10	2,998,183		204,821		652,595								2,550,409	96.38
340.11	3,394,538		265,388										3,659,926	99.85
340.20	270,825		33,047										303,872	46.08
341.00	275		254										529	50.03
343.10	354,566		48,589										403,155	35.35
343.20	676,230		108,702		11,201								773,731	35.40
344.00	90,276		4,780		1,912								93,144	73.13
346.00	3,372,123		580,110		95,902		3,000						3,853,331	54.48
347.00	29,434		10,941										40,375	27.31
TOTAL	78,617,020		9,332,984		2,123,610		465,450		0		0		85,360,944	



SUEZ WATER PENNSYLVANIA, INC.

TABLE 3. CALCULATION OF DEPRECIATION ACCRUALS FOR THE TWELVE MONTHS ENDED DECEMBER 31, 2019

ACCOUNT	ORIGINAL COST AS OF DECEMBER 31, 2018	ACQUISITIONS	ADJUSTED ORIGINAL COST AS OF DECEMBER 31, 2018	ORIGINAL COST AS OF DECEMBER 31, 2019	ACCRUAL RATE	AVERAGE ACCRUAL	AMORTIZATION OF NET SALVAGE	PROJECTED DEPRECIATION ACCRUALS
(1)	(2)	(3)	(4)=(2)+(3)	(5)	(6)	(7)*	(8)	(9)=(7)+(8)
301.00	66,399.00		66,399.00	66,399.00	-			0
302.00	64,265.56		64,265.56	64,265.56	-			0
303.00	4,422,348.30	6,750.71	4,429,099.01	4,429,099.01	-		6,374	6,374
304.20	3,721,078.15		3,721,078.15	3,721,078.15	2.27	84,468	343	84,811
304.30	19,476,430.74	5,625.59	19,482,056.33	19,482,056.33	2.46	479,259	3,875	483,134
304.40	282,963.06	136,308.05	419,271.11	419,271.11	2.94	12,327		12,327
304.51	9,934,062.48		9,934,062.48	10,145,168.81	2.34	233,799	1,280	235,079
304.52	1,563,451.19	78,758.26	1,642,209.45	4,336,230.69	3.08	57,615	2,240	59,855
304.53	350,989.27		350,989.27	351,471.62	4.65	16,339	480	16,819
305.00	434,632.39		434,632.39	434,632.39	1.88	8,171		8,171
306.00	3,364,843.60		3,364,843.60	6,507,176.44	2.19	76,557	235	76,792
307.00	1,028,041.81		1,028,041.81	1,028,041.81	1.76	18,094	4,156	22,250
308.00	13,358.04		13,358.04	13,358.04	3.07	410		410
311.20	14,873,205.99		14,873,205.99	16,307,072.06	3.53	536,477	18,713	555,190
311.30	314,155.59		314,155.59	314,155.59	1.27	3,990		3,990
320.10	37,585,317.00		37,585,317.00	38,162,906.58	2.30	867,422	5,741	873,163
320.20	447,524.82		447,524.82	447,524.82	8.77	39,248		39,248
320.30	6,738,955.58		6,738,955.58	8,436,076.94	7.36	514,443	18,181	532,624
330.00	11,113,262.45	455,717.80	11,568,980.25	13,813,043.79	2.66	312,314	15,945	328,259
331.00	159,112,492.11	4,964,309.87	164,076,801.98	192,092,452.47	1.59	2,736,383	124,446	2,860,829
333.00	39,835,449.55	456,347.87	40,291,797.42	41,020,732.30	1.80	731,426	19,338	750,764
334.00	20,078,252.17	202,521.24	20,280,773.41	21,503,128.88	4.53	940,264	42,433	982,697
335.00	7,772,454.92	241,847.49	8,014,302.41	8,108,690.83	1.67	134,520	472	134,992
339.00	539,255.49		539,255.49	539,255.49	1.59	8,574		8,574
340.10	3,298,776.11		3,298,776.11	2,646,180.68	6.26	204,801	20	204,821
340.11	3,665,579.00		3,665,579.00	3,665,579.00	7.24	265,388		265,388
340.20	659,446.10		659,446.10	659,446.10	5.01	33,038	9	33,047
341.00	1,057.45		1,057.45	1,057.45	24.02	254		254
343.10	1,140,592.94		1,140,592.94	1,140,592.94	4.26	48,589		48,589
343.20	2,064,201.51		2,064,201.51	2,185,518.00	5.13	108,702		108,702
344.00	129,279.71		129,279.71	127,367.71	3.70	4,780		4,780
346.00	6,925,959.87		6,925,959.87	7,073,007.59	8.28	578,587	1,523	580,110
347.00	147,854.10		147,854.10	147,854.10	7.40	10,941		10,941
TOTAL	361,165,936.05	6,548,186.88	367,714,122.93	409,389,892.28		9,067,180	265,804	9,332,984

* 12-month total based on monthly averages

SUEZ WATER PENNSYLVANIA, INC.

TABLE 4. AMORTIZATION OF EXPERIENCED AND ESTIMATED NET SALVAGE

ACCOUNT (1)	2015		2016		2017		2018		2019		NET SALVAGE (12)	SALVAGE ACCRUAL (13)=(12)/5
	GROSS SALVAGE (2)	- COST OF REMOVAL (3) +	GROSS SALVAGE (4)	- COST OF REMOVAL (5) +	GROSS SALVAGE (6)	- COST OF REMOVAL (7) +	GROSS SALVAGE (8)	- COST OF REMOVAL (9) +	GROSS SALVAGE (10)	- COST OF REMOVAL (11) =		
303.00		31,870									(31,870)	(6,374)
304.20		991		392		82					(1,465)	(293)
304.30		6,690		3,491		8,380					(18,561)	(3,712)
304.51								6,400		6,400	(12,800)	(2,560)
304.52								11,200		11,200	(22,400)	(4,480)
304.53								2,400		2,400	(4,800)	(960)
306.00										40,000	(40,000)	(8,000)
307.00		2,450									(2,450)	(490)
311.20		15,818		19,218		3,725		43,500		53,500	(135,761)	(27,152)
320.10		278		22		501		5,000		30,000	(35,801)	(7,160)
320.30		28,976		23,239		23,442		15,000		40,000	(130,657)	(26,131)
330.00		189		13,273		11,262		55,000		45,000	(124,724)	(24,945)
331.00		64,378		194,519		237,069		103,750		228,750	(828,466)	(165,693)
333.00		11,225		33,371		42,620		1,800		1,800	(90,816)	(18,163)
334.00	14,105	202,894	5,351	(78,539)	13,554	(6,258)	18,000	3,000			(106,087)	(21,217)
335.00	4,272	2,330	2,453	3,611	903	2,742	400	400			(1,856)	(371)
340.10				98							(98)	(20)
340.20				47							(47)	(9)
346.00		2,032		786		1,796		3,000		3,000	(10,615)	(2,123)
Total	18,377	370,120	7,803	213,529	14,457	325,362	0	265,450	0	465,450	(1,599,275)	(319,853)

**PART II. DETAILED DEPRECIATION
CALCULATIONS**

CUMULATIVE DEPRECIATED ORIGINAL COST

SUEZ WATER PENNSYLVANIA, INC.

CUMULATIVE DEPRECIATED ORIGINAL COST BY YEAR INSTALLED
RELATED TO ORIGINAL COST AS OF DECEMBER 31, 2019

YEAR INST (1)	ORIGINAL COST (2)	ACCRUED DEPRECIATION (3)	AMOUNT		CUMULATIVE AMOUNT (5)	PCT OF COL 4 TOTAL (6)
			(2)	(3)		
1894	3,946	3,946				0.0
1896	9,444	9,146		298	298	0.0
1900	11,560	11,560			298	0.0
1906	7,805	7,805			298	0.0
1908	21,660	21,661		1-	297	0.0
1909	38,244	35,958	2,286		2,583	0.0
1912	11,253	10,288		965	3,548	0.0
1917	207	207			3,548	0.0
1920	743	393		350	3,898	0.0
1921	4,974	4,180		794	4,692	0.0
1922	8,792	8,456		336	5,028	0.0
1923	7,482	6,308	1,174		6,202	0.0
1924	1,546	900		646	6,848	0.0
1925	6,614	4,168	2,446		9,294	0.0
1926	841	465		376	9,670	0.0
1927	55,988	44,123	11,865		21,535	0.0
1928	48,202	37,465	10,737		32,272	0.0
1929	25,799	21,666	4,133		36,405	0.0
1930	7,429	3,800	3,629		40,034	0.0
1931	3,681	2,379	1,302		41,336	0.0
1932	1,211	656		555	41,891	0.0
1933	14,390	12,127	2,263		44,154	0.0
1934	3,660	1,881	1,779		45,933	0.0
1935	5,529	3,077	2,452		48,385	0.0
1936	11,547	9,309	2,238		50,623	0.0
1937	12,304	7,249	5,055		55,678	0.0
1938	8,612	4,194	4,418		60,096	0.0
1939	16,898	8,268	8,630		68,726	0.0
1940	9,388	6,689	2,699		71,425	0.0
1941	17,274	12,089	5,185		76,610	0.0
1942	12,218	5,977	6,241		82,851	0.0
1943	2,266	1,417		849	83,700	0.0
1944	9,274	4,992	4,282		87,982	0.0
1945	6,379	3,539	2,840		90,822	0.0
1946	21,632	11,467	10,165		100,987	0.0
1947	28,571	13,915	14,656		115,643	0.0
1948	59,985	32,166	27,819		143,462	0.0
1949	18,758	16,369	2,389		145,851	0.0
1950	34,212	21,201	13,011		158,862	0.0
1951	45,097	27,133	17,964		176,826	0.1
1952	55,624	27,367	28,257		205,083	0.1
1953	49,950	34,103	15,847		220,930	0.1
1954	13,244	8,010	5,234		226,164	0.1
1955	39,187	33,011	6,176		232,340	0.1
1956	74,295	44,499	29,796		262,136	0.1
1957	71,549	45,797	25,752		287,888	0.1

SUEZ WATER PENNSYLVANIA, INC.

CUMULATIVE DEPRECIATED ORIGINAL COST BY YEAR INSTALLED
RELATED TO ORIGINAL COST AS OF DECEMBER 31, 2019

YEAR INST (1)	ORIGINAL COST (2)	ACCRUED DEPRECIATION (3)	DEPRECIATED ORIGINAL COST		PCT OF COL 4 TOTAL (6)
			AMOUNT (2) - (3) (4)	CUMULATIVE AMOUNT (5)	
1958	197,135	133,121	64,014	351,902	0.1
1959	317,468	167,050	150,418	502,320	0.2
1960	350,077	171,892	178,185	680,505	0.2
1961	291,813	164,619	127,194	807,699	0.3
1962	182,647	107,174	75,473	883,172	0.3
1963	365,489	193,448	172,041	1,055,213	0.3
1964	771,110	423,758	347,352	1,402,565	0.4
1965	116,688	71,527	45,161	1,447,726	0.5
1966	347,311	173,771	173,540	1,621,266	0.5
1967	312,284	154,078	158,206	1,779,472	0.6
1968	240,643	107,428	133,215	1,912,687	0.6
1969	447,223	205,866	241,357	2,154,044	0.7
1970	669,222	283,061	386,161	2,540,205	0.8
1971	513,045	260,740	252,305	2,792,510	0.9
1972	531,577	239,757	291,820	3,084,330	1.0
1973	1,005,299	443,950	561,349	3,645,679	1.1
1974	752,019	376,546	375,473	4,021,152	1.3
1975	934,998	391,896	543,102	4,564,254	1.4
1976	840,364	512,955	327,409	4,891,663	1.5
1977	847,106	388,298	458,808	5,350,471	1.7
1978	1,593,611	654,477	939,134	6,289,605	2.0
1979	840,534	401,066	439,468	6,729,073	2.1
1980	1,357,485	767,944	589,541	7,318,614	2.3
1981	747,376	354,422	392,954	7,711,568	2.4
1982	1,183,611	565,620	617,991	8,329,559	2.6
1983	843,658	388,673	454,985	8,784,544	2.7
1984	1,859,668	948,200	911,468	9,696,012	3.0
1985	2,873,604	1,201,171	1,672,433	11,368,445	3.6
1986	1,839,967	806,393	1,033,574	12,402,019	3.9
1987	3,898,089	1,278,265	2,619,824	15,021,843	4.7
1988	3,545,213	1,369,884	2,175,329	17,197,172	5.4
1989	3,209,156	1,107,835	2,101,321	19,298,493	6.0
1990	3,643,158	1,391,643	2,251,515	21,550,008	6.7
1991	4,071,868	1,591,250	2,480,618	24,030,626	7.5
1992	2,294,534	1,085,276	1,209,258	25,239,884	7.9
1993	8,932,172	4,993,701	3,938,471	29,178,355	9.1
1994	4,100,134	1,343,665	2,756,469	31,934,824	10.0
1995	2,856,953	844,221	2,012,732	33,947,556	10.6
1996	2,586,420	912,884	1,673,536	35,621,092	11.1
1997	5,922,772	1,637,812	4,284,960	39,906,052	12.5
1998	6,660,476	2,342,912	4,317,564	44,223,616	13.8
1999	7,020,167	2,665,823	4,354,344	48,577,960	15.2
2000	6,905,129	1,907,181	4,997,948	53,575,908	16.8
2001	5,883,834	1,619,433	4,264,401	57,840,309	18.1
2002	4,370,415	1,486,836	2,883,579	60,723,888	19.0
2003	7,164,720	1,691,587	5,473,133	66,197,021	20.7

SUEZ WATER PENNSYLVANIA, INC.

CUMULATIVE DEPRECIATED ORIGINAL COST BY YEAR INSTALLED
RELATED TO ORIGINAL COST AS OF DECEMBER 31, 2019

YEAR INST (1)	ORIGINAL COST (2)	ACCRUED DEPRECIATION (3)	AMOUNT		CUMULATIVE AMOUNT (5)	PCT OF COL 4 TOTAL (6)
			(2)	(3)		
2004	5,070,797	1,319,715	3,751,082		69,948,103	21.9
2005	13,778,907	5,478,778	8,300,129		78,248,232	24.5
2006	23,742,841	7,151,299	16,591,542		94,839,774	29.7
2007	7,386,688	1,739,447	5,647,241		100,487,015	31.5
2008	9,537,077	1,634,669	7,902,408		108,389,423	33.9
2009	10,147,161	2,300,375	7,846,786		116,236,209	36.4
2010	14,003,871	3,077,600	10,926,271		127,162,480	39.8
2011	14,993,717	5,611,963	9,381,754		136,544,234	42.7
2012	10,183,136	1,982,260	8,200,876		144,745,110	45.3
2013	7,775,984	1,951,636	5,824,348		150,569,458	47.1
2014	14,778,123	1,879,766	12,898,357		163,467,815	51.2
2015	14,957,204	2,039,146	12,918,058		176,385,873	55.2
2016	56,702,287	6,175,849	50,526,438		226,912,311	71.0
2017	22,967,220	926,259	22,040,961		248,953,272	77.9
2018	27,848,227	685,648	27,162,579		276,115,851	86.4
2019	43,799,380	424,585	43,374,795		319,490,646	100.0
SUBTOTAL	404,830,129	85,339,480	319,490,650			
NONDEPRECIABLE PLANT	4,559,764	21,464	4,538,300			
TOTAL	409,389,893	85,360,944	324,028,950			

UTILITY PLANT IN SERVICE

SUEZ WATER PENNSYLVANIA, INC.

ACCOUNT 304.2 STRUCTURES AND IMPROVEMENTS - PUMPING

CALCULATED REMAINING LIFE DEPRECIATION ACCRUAL
RELATED TO ORIGINAL COST AS OF DECEMBER 31, 2019

YEAR (1)	ORIGINAL COST (2)	CALCULATED ACCRUED (3)	ALLOC. BOOK RESERVE (4)	FUTURE BOOK ACCRUALS (5)	REM. LIFE (6)	ANNUAL ACCRUAL (7)
SURVIVOR CURVE.. IOWA 55-R2						
NET SALVAGE PERCENT.. 0						
1894	3,945.76	3,946	3,946			
1896	3,234.56	3,235	3,235			
1900	11,559.50	11,560	11,560			
1906	7,805.01	7,805	7,805			
1908	15,400.56	15,401	15,401			
1921	4,500.02	4,477	3,925	575	0.51	575
1923	6,690.03	6,585	5,774	916	1.54	595
1925	985.10	968	849	136	1.65	82
1926	99.78	97	85	15	2.65	6
1927	5,482.36	5,324	4,668	814	2.74	297
1928	31,464.31	30,517	26,757	4,707	2.84	1,657
1931	209.40	202	177	32	3.25	10
1933	42.67	41	36	7	4.41	2
1937	465.00	437	383	82	5.22	16
1940	1,872.03	1,741	1,526	346	5.97	58
1941	63.00	58	51	12	6.25	2
1944	227.13	208	182	45	7.14	6
1945	1,737.25	1,579	1,384	353	7.47	47
1946	427.37	386	338	89	7.80	11
1950	2,980.08	2,651	2,324	656	8.62	76
1952	790.89	694	608	183	9.42	19
1954	215.60	186	163	53	10.26	5
1956	153.69	132	116	38	10.58	4
1957	562.26	478	419	143	11.03	13
1958	632.11	533	467	165	11.49	14
1959	2,082.89	1,739	1,525	558	11.96	47
1960	154.19	128	112	42	11.93	4
1961	1,591.08	1,312	1,150	441	12.43	35
1962	330.20	270	237	93	12.92	7
1964	9,917.48	7,982	6,999	2,918	13.46	217
1965	897.47	714	626	271	13.99	19
1966	5,872.32	4,618	4,049	1,823	14.53	125
1967	7,245.30	5,630	4,936	2,309	15.07	153
1969	6,923.75	5,280	4,629	2,295	15.72	146
1970	5,863.00	4,411	3,868	1,995	16.29	122
1971	821.00	613	537	284	16.44	17
1972	13,906.43	10,238	8,977	4,929	17.02	290
1973	11,539.20	8,371	7,340	4,199	17.60	239
1974	15,029.15	10,737	9,414	5,615	18.19	309
1975	2,184.81	1,546	1,356	829	18.39	45
1976	48,715.62	33,906	29,729	18,987	19.00	999
1977	73.00	50	44	29	19.61	1
1978	270.98	183	160	111	19.85	6

SUEZ WATER PENNSYLVANIA, INC.

ACCOUNT 304.2 STRUCTURES AND IMPROVEMENTS - PUMPING

CALCULATED REMAINING LIFE DEPRECIATION ACCRUAL
RELATED TO ORIGINAL COST AS OF DECEMBER 31, 2019

YEAR (1)	ORIGINAL COST (2)	CALCULATED ACCRUED (3)	ALLOC. BOOK RESERVE (4)	FUTURE BOOK ACCRUALS (5)	REM. LIFE (6)	ANNUAL ACCRUAL (7)
SURVIVOR CURVE.. IOWA 55-R2						
NET SALVAGE PERCENT.. 0						
1980	12,728.00	8,296	7,274	5,454	21.10	258
1981	7,412.46	4,766	4,179	3,233	21.38	151
1982	11,911.46	7,504	6,579	5,332	22.02	242
1983	11,775.00	7,263	6,368	5,407	22.67	239
1984	53,133.53	32,252	28,278	24,856	22.98	1,082
1985	1,587.00	942	826	761	23.64	32
1986	80,828.07	46,848	41,076	39,752	24.30	1,636
1987	7,692.00	4,375	3,836	3,856	24.64	156
1988	138,137.20	76,583	67,148	70,989	25.32	2,804
1989	21,942.61	11,913	10,445	11,498	25.68	448
1990	98,108.21	51,801	45,419	52,689	26.37	1,998
1991	1,959.00	1,010	886	1,073	26.75	40
1993	4,122.00	2,010	1,762	2,360	27.85	85
1994	10,160.00	4,793	4,202	5,958	28.55	209
1995	9,166.00	4,200	3,683	5,483	28.97	189
1996	45,516.00	20,109	17,632	27,884	29.69	939
1997	117,264.11	50,130	43,954	73,310	30.13	2,433
1998	732,013.46	300,565	263,535	468,478	30.86	15,181
2000	5,600.51	2,129	1,867	3,734	31.78	117
2001	7,922.63	2,873	2,519	5,404	32.52	166
2002	5,476.93	1,898	1,664	3,813	33.01	116
2005	5,382.54	1,592	1,396	3,987	34.52	115
2006	9,957.35	2,769	2,428	7,529	35.04	215
2007	24,533.69	6,379	5,593	18,941	35.58	532
2008	6,444.17	1,556	1,364	5,080	36.12	141
2009	535,672.72	119,241	104,550	431,123	36.67	11,757
2010	301,293.94	61,524	53,944	247,350	37.01	6,683
2011	55,664.60	10,265	9,000	46,665	37.59	1,241
2012	46,287.20	7,637	6,696	39,591	37.95	1,043
2013	512,705.75	74,342	65,183	447,523	38.34	11,672
2014	6,440.40	804	705	5,735	38.56	149
2015	223,611.96	23,256	20,391	203,221	38.79	5,239
2016	315,350.74	26,048	22,839	292,512	38.87	7,525
2017	58,313.57	3,528	3,093	55,221	38.82	1,422
	3,721,078.15	1,178,170	1,038,181	2,682,897		82,531

COMPOSITE REMAINING LIFE AND ANNUAL ACCRUAL RATE, PERCENT .. 32.5 2.22

SUEZ WATER PENNSYLVANIA, INC.

ACCOUNT 304.3 STRUCTURES AND IMPROVEMENTS - WATER TREATMENT PLANT

CALCULATED REMAINING LIFE DEPRECIATION ACCRUAL
RELATED TO ORIGINAL COST AS OF DECEMBER 31, 2019

YEAR (1)	ORIGINAL COST (2)	CALCULATED ACCRUED (3)	ALLOC. BOOK RESERVE (4)	FUTURE BOOK ACCRUALS (5)	REM. LIFE (6)	ANNUAL ACCRUAL (7)
BLOOMSBURG TREATMENT PLANT						
INTERIM SURVIVOR CURVE.. IOWA 55-S1.5						
PROBABLE RETIREMENT YEAR.. 6-2028						
NET SALVAGE PERCENT.. 0						
1912	11,253.12	11,251	10,288	965	0.02	965
1941	390.74	365	334	57	5.53	10
1951	342.13	314	287	55	6.13	9
1956	76.86	70	64	13	6.43	2
1960	1,437.59	1,292	1,181	256	6.73	38
1962	267.74	239	219	49	7.02	7
1966	43.33	38	35	9	7.10	1
1971	9.54	8	7	2	7.36	
1972	95.68	83	76	20	7.45	3
1974	1,353.61	1,164	1,064	289	7.41	39
1976	1,354.32	1,155	1,056	298	7.52	40
1980	1,422.00	1,191	1,089	333	7.67	43
1982	761.47	631	577	184	7.75	24
1986	5,678.99	4,604	4,210	1,469	7.82	188
1988	34,666.00	27,736	25,362	9,304	7.87	1,182
1990	886.17	698	638	248	7.96	31
1992	5,966.23	4,611	4,216	1,750	8.09	216
1995	4,590.00	3,453	3,157	1,433	8.07	178
1996	3,296.00	2,448	2,238	1,058	8.15	130
1998	1,004.20	728	666	339	8.17	41
1999	11,767.95	8,395	7,676	4,092	8.24	497
2001	2,646.12	1,831	1,674	972	8.24	118
2002	39,601.77	26,890	24,588	15,014	8.27	1,815
2003	8,759.49	5,825	5,326	3,433	8.31	413
2004	3,380.35	2,201	2,013	1,368	8.31	165
2005	40,329.46	25,613	23,420	16,909	8.33	2,030
	181,380.86	132,834	121,462	59,919		8,185

BLOOMSBURG TREATMENT PLANT - NEW
INTERIM SURVIVOR CURVE.. IOWA 55-S1.5
PROBABLE RETIREMENT YEAR.. 6-2076
NET SALVAGE PERCENT.. 0

2016	5,829,778.36	469,297	429,119	5,400,659	39.98	135,084
	5,829,778.36	469,297	429,119	5,400,659		135,084

SUEZ WATER PENNSYLVANIA, INC.

ACCOUNT 304.3 STRUCTURES AND IMPROVEMENTS - WATER TREATMENT PLANT

CALCULATED REMAINING LIFE DEPRECIATION ACCRUAL
RELATED TO ORIGINAL COST AS OF DECEMBER 31, 2019

YEAR (1)	ORIGINAL COST (2)	CALCULATED ACCRUED (3)	ALLOC. BOOK RESERVE (4)	FUTURE BOOK ACCRUALS (5)	REM. LIFE (6)	ANNUAL ACCRUAL (7)
SIXTH STREET PLANT						
INTERIM SURVIVOR CURVE.. IOWA 55-S1.5						
PROBABLE RETIREMENT YEAR.. 6-2045						
NET SALVAGE PERCENT.. 0						
1964	44,792.41	36,295	33,188	11,605	12.99	893
1980	34,687.00	24,388	22,300	12,387	16.68	743
1984	102,973.00	68,724	62,840	40,133	17.69	2,269
1985	97,842.00	64,478	58,958	38,884	17.85	2,178
1986	35,320.00	22,954	20,989	14,331	18.05	794
1988	43,707.00	27,535	25,178	18,529	18.50	1,002
1989	18,985.00	11,756	10,750	8,235	18.76	439
1993	763,622.37	437,097	399,676	363,947	19.80	18,381
1995	4,309.00	2,365	2,163	2,146	20.14	107
1997	2,832.04	1,478	1,351	1,481	20.60	72
2000	12,075.79	5,770	5,276	6,800	21.31	319
2001	19,652.67	9,089	8,311	11,342	21.50	528
2002	20,860.96	9,308	8,511	12,350	21.72	569
2003	24,257.33	10,445	9,551	14,707	21.82	674
2004	24,519.48	10,109	9,244	15,276	22.09	692
2005	2,782,262.44	1,097,324	1,003,378	1,778,884	22.26	79,914
2006	58,487.29	21,950	20,071	38,417	22.47	1,710
2009	511.46	160	146	365	23.06	16
2010	3,237.38	941	860	2,377	23.18	103
2011	32,438.90	8,658	7,917	24,522	23.35	1,050
2015	28,996.45	4,581	4,189	24,808	23.99	1,034
2016	3,656.81	463	423	3,233	24.12	134
	4,160,026.78	1,875,868	1,715,268	2,444,759		113,621

RICHARD C. RABOLD PLANT
INTERIM SURVIVOR CURVE.. IOWA 55-S1.5
PROBABLE RETIREMENT YEAR.. 6-2043
NET SALVAGE PERCENT.. 0

1991	17,824.37	10,819	9,893	7,932	18.45	430
1993	1,569,369.50	919,023	840,342	729,027	18.75	38,881
1995	1,996.00	1,120	1,024	972	19.17	51
2003	7,686.63	3,424	3,131	4,556	20.54	222
2010	2,848.74	866	792	2,057	21.75	95
2011	2,940.92	825	754	2,187	21.80	100
2012	15,515.08	3,944	3,606	11,909	22.00	541
2013	1,000.00	227	208	792	22.15	36
	1,619,181.24	940,248	859,750	759,431		40,356

SUEZ WATER PENNSYLVANIA, INC.

ACCOUNT 304.3 STRUCTURES AND IMPROVEMENTS - WATER TREATMENT PLANT

CALCULATED REMAINING LIFE DEPRECIATION ACCRUAL
RELATED TO ORIGINAL COST AS OF DECEMBER 31, 2019

YEAR (1)	ORIGINAL COST (2)	CALCULATED ACCRUED (3)	ALLOC. BOOK RESERVE (4)	FUTURE BOOK ACCRUALS (5)	REM. LIFE (6)	ANNUAL ACCRUAL (7)
MARKET STREET PLANT						
INTERIM SURVIVOR CURVE.. IOWA 55-S1.5						
PROBABLE RETIREMENT YEAR.. 6-2024						
NET SALVAGE PERCENT.. 0						
1964	51,971.42	48,458	44,309	7,662	4.02	1,906
1965	9,550.56	8,901	8,139	1,412	3.98	355
1966	139.02	129	118	21	3.97	5
1986	8,998.00	7,958	7,277	1,721	4.38	393
1987	5,535.00	4,875	4,458	1,077	4.40	245
1988	4,826.00	4,241	3,878	948	4.34	218
1989	767.00	671	614	153	4.34	35
1999	6,698.01	5,506	5,035	1,663	4.44	375
2001	6,510.83	5,252	4,802	1,709	4.44	385
2002	3,118.36	2,488	2,275	843	4.43	190
2003	715.28	563	515	200	4.47	45
2014	2,530.24	1,393	1,274	1,257	4.49	280
	101,359.72	90,435	82,692	18,668		4,432

OLD HUMMELSTOWN PLANT
FULLY ACCRUED

1908	1,309.27	1,309	1,309			
1983	6,302.00	6,302	6,302			
1984	21,523.00	21,523	21,523			
1987	5,452.00	5,452	5,452			
1991	3,358.00	3,358	3,358			
1995	8,553.00	8,553	8,553			
1999	13,270.24	13,270	13,270			
2000	3,407.62	3,408	3,408			
2001	16,389.60	16,390	16,390			
2003	7,018.97	7,019	7,019			
	86,583.70	86,584	86,584			

SUEZ WATER PENNSYLVANIA, INC.

ACCOUNT 304.3 STRUCTURES AND IMPROVEMENTS - WATER TREATMENT PLANT

CALCULATED REMAINING LIFE DEPRECIATION ACCRUAL
RELATED TO ORIGINAL COST AS OF DECEMBER 31, 2019

YEAR (1)	ORIGINAL COST (2)	CALCULATED ACCRUED (3)	ALLOC. BOOK RESERVE (4)	FUTURE BOOK ACCRUALS (5)	REM. LIFE (6)	ANNUAL ACCRUAL (7)
HUMMELSTOWN MEMBRANE PLANT						
INTERIM SURVIVOR CURVE.. IOWA 55-S1.5						
PROBABLE RETIREMENT YEAR.. 6-2061						
NET SALVAGE PERCENT.. 0						
2006	4,400,180.64	1,354,376	1,233,328	3,166,853	30.36	104,310
2010	6,116.39	1,395	1,270	4,846	32.17	151
2015	4,248.57	491	447	3,801	34.41	110
	4,410,545.60	1,356,262	1,235,045	3,175,501		104,571
OTHER TREATMENT FACILITIES						
SURVIVOR CURVE.. IOWA 50-R3						
NET SALVAGE PERCENT.. 0						
1975	663.64	523	476	187	12.00	16
1985	915.00	606	552	363	17.58	21
1986	2,724.00	1,761	1,604	1,120	18.31	61
1987	8,242.00	5,224	4,757	3,485	18.78	186
1988	8,453.00	5,219	4,753	3,700	19.52	190
1991	12,418.00	7,078	6,445	5,973	21.50	278
1996	4,244.00	2,055	1,871	2,373	25.04	95
1998	201,852.42	90,712	82,604	119,248	26.34	4,527
2001	25,996.41	10,196	9,285	16,712	28.67	583
2002	7,025.86	2,619	2,385	4,641	29.45	158
2004	82,833.24	27,600	25,133	57,700	31.01	1,861
2005	12,090.80	3,787	3,449	8,642	31.80	272
2006	451,572.47	132,898	121,020	330,552	32.37	10,212
2007	123,642.36	33,853	30,827	92,815	33.16	2,799
2008	36,199.17	9,158	8,339	27,860	33.95	821
2009	9,741.31	2,260	2,058	7,683	34.75	221
2010	691,275.39	145,790	132,760	558,516	35.55	15,711
2011	80,358.65	15,236	13,874	66,484	36.34	1,829
2012	16,410.88	2,757	2,511	13,900	37.14	374
2013	131,072.79	19,163	17,450	113,623	37.95	2,994
2014	12,170.26	1,513	1,378	10,792	38.75	279
2015	38,004.49	3,884	3,537	34,468	39.55	872

SUEZ WATER PENNSYLVANIA, INC.

ACCOUNT 304.3 STRUCTURES AND IMPROVEMENTS - WATER TREATMENT PLANT

CALCULATED REMAINING LIFE DEPRECIATION ACCRUAL
RELATED TO ORIGINAL COST AS OF DECEMBER 31, 2019

YEAR (1)	ORIGINAL COST (2)	CALCULATED ACCRUED (3)	ALLOC. BOOK RESERVE (4)	FUTURE BOOK ACCRUALS (5)	REM. LIFE (6)	ANNUAL ACCRUAL (7)
OTHER TREATMENT FACILITIES						
SURVIVOR CURVE.. IOWA 50-R3						
NET SALVAGE PERCENT.. 0						
2016	1,128,592.39	90,062	82,013	1,046,580	40.36	25,931
2017	1,075.95	62	56	1,019	40.98	25
2018	5,625.59	196	178	5,447	41.60	131
	3,093,200.07	614,212	559,316	2,533,884		70,447
	19,482,056.33	5,565,740	5,089,236	14,392,821		476,696
COMPOSITE REMAINING LIFE AND ANNUAL ACCRUAL RATE, PERCENT ..						30.2 2.45

SUEZ WATER PENNSYLVANIA, INC.

ACCOUNT 304.4 STRUCTURES AND IMPROVEMENTS - TRANSMISSION AND DISTRIBUTION

CALCULATED REMAINING LIFE DEPRECIATION ACCRUAL
RELATED TO ORIGINAL COST AS OF DECEMBER 31, 2019

YEAR (1)	ORIGINAL COST (2)	CALCULATED ACCRUED (3)	ALLOC. BOOK RESERVE (4)	FUTURE BOOK ACCRUALS (5)	REM. LIFE (6)	ANNUAL ACCRUAL (7)
SURVIVOR CURVE.. IOWA 40-R3						
NET SALVAGE PERCENT.. 0						
2006	8,163.53	2,942	2,496	5,668	23.96	237
2008	3,449.20	1,075	912	2,537	25.40	100
2009	29,035.00	8,292	7,033	22,002	26.26	838
2010	199.00	52	44	155	27.00	6
2012	2,576.00	535	454	2,122	28.60	74
2013	3,465.00	629	534	2,931	29.34	100
2014	551.22	85	72	479	30.21	16
2016	6,801.65	676	573	6,229	31.71	196
2017	228,722.46	16,354	13,872	214,850	32.47	6,617
2018	136,308.05	5,916	5,018	131,290	33.10	3,966
	419,271.11	36,556	31,008	388,263		12,150

COMPOSITE REMAINING LIFE AND ANNUAL ACCRUAL RATE, PERCENT .. 32.0 2.90

SUEZ WATER PENNSYLVANIA, INC.

ACCOUNT 304.51 STRUCTURES AND IMPROVEMENTS - OFFICES

CALCULATED REMAINING LIFE DEPRECIATION ACCRUAL
RELATED TO ORIGINAL COST AS OF DECEMBER 31, 2019

YEAR (1)	ORIGINAL COST (2)	CALCULATED ACCRUED (3)	ALLOC. BOOK RESERVE (4)	FUTURE BOOK ACCRUALS (5)	REM. LIFE (6)	ANNUAL ACCRUAL (7)
BLOOMSBURG TREATMENT PLANT - NEW						
INTERIM SURVIVOR CURVE.. IOWA 55-S1.5						
PROBABLE RETIREMENT YEAR.. 6-2076						
NET SALVAGE PERCENT.. 0						
2016	8,862,454.27	713,428	663,799	8,198,656	39.98	205,069
2018	171,017.94	5,986	5,570	165,448	41.42	3,994
2019	209,820.00	2,476	2,304	207,516	42.05	4,935
	9,243,292.21	721,890	671,672	8,571,620		213,998
OTHER OFFICES						
SURVIVOR CURVE.. IOWA 45-R2.5						
NET SALVAGE PERCENT.. 0						
1975	377.54	307	286	92	10.14	9
1976	188.69	152	141	47	10.55	4
1981	409.13	307	286	123	12.78	10
1985	133,687.09	93,634	87,120	46,567	14.76	3,155
1986	2,577.21	1,770	1,647	930	15.28	61
1987	2,397.92	1,605	1,493	905	16.04	56
1990	32,845.31	20,541	19,112	13,733	17.67	777
1991	2,784.04	1,698	1,580	1,204	18.23	66
1993	1,258.06	727	676	582	19.37	30
1995	2,218.69	1,201	1,117	1,101	20.75	53
1996	19,438.74	10,186	9,477	9,961	21.35	467
1997	14,362.23	7,270	6,764	7,598	21.95	346
1998	5,167.93	2,522	2,347	2,821	22.56	125
1999	105,938.74	49,728	46,269	59,670	23.17	2,575
2000	2,594.52	1,164	1,083	1,511	23.98	63
2001	2,947.85	1,265	1,177	1,771	24.60	72
2004	4,846.14	1,788	1,664	3,183	26.52	120
2005	2,682.98	934	869	1,814	27.17	67
2006	6,372.87	2,082	1,937	4,436	27.82	159
2007	27,444.64	8,371	7,789	19,656	28.48	690
2008	5,310.28	1,502	1,398	3,913	29.15	134
2009	5,743.83	1,496	1,392	4,352	29.82	146
2011	5,964.45	1,282	1,193	4,772	31.03	154
2012	13,724.59	2,624	2,441	11,283	31.72	356
2013	17,976.46	3,015	2,805	15,171	32.26	470
2014	20,326.86	2,919	2,716	17,611	32.81	537
2015	46,664.73	5,544	5,158	41,506	33.38	1,243

SUEZ WATER PENNSYLVANIA, INC.

ACCOUNT 304.51 STRUCTURES AND IMPROVEMENTS - OFFICES

CALCULATED REMAINING LIFE DEPRECIATION ACCRUAL
RELATED TO ORIGINAL COST AS OF DECEMBER 31, 2019

YEAR (1)	ORIGINAL COST (2)	CALCULATED ACCRUED (3)	ALLOC. BOOK RESERVE (4)	FUTURE BOOK ACCRUALS (5)	REM. LIFE (6)	ANNUAL ACCRUAL (7)
OTHER OFFICES						
SURVIVOR CURVE.. IOWA 45-R2.5						
NET SALVAGE PERCENT.. 0						
2017	375,572.12	25,614	23,832	351,740	34.13	10,306
2018	17,966.63	755	702	17,264	34.21	505
2019	22,086.33	327	304	21,782	33.17	657
	901,876.60	252,330	234,777	667,100		23,413
	10,145,168.81	974,220	906,449	9,238,720		237,411
COMPOSITE REMAINING LIFE AND ANNUAL ACCRUAL RATE, PERCENT ..						38.9 2.34

SUEZ WATER PENNSYLVANIA, INC.

ACCOUNT 304.52 STRUCTURES AND IMPROVEMENTS - STORES, SHOP AND GARAGE

CALCULATED REMAINING LIFE DEPRECIATION ACCRUAL
RELATED TO ORIGINAL COST AS OF DECEMBER 31, 2019

YEAR (1)	ORIGINAL COST (2)	CALCULATED ACCRUED (3)	ALLOC. BOOK RESERVE (4)	FUTURE BOOK ACCRUALS (5)	REM. LIFE (6)	ANNUAL ACCRUAL (7)
SUMMIT VIEW MAINTENANCE BUILDING						
INTERIM SURVIVOR CURVE.. IOWA 60-S0.5						
PROBABLE RETIREMENT YEAR.. 6-2043						
NET SALVAGE PERCENT.. 0						
2003	1,317,857.33	591,454	475,323	842,534	20.26	41,586
2018	26,958.50	1,771	1,423	25,535	21.33	1,197
2019	2,451,581.47	55,896	44,921	2,406,661	21.38	112,566
	3,796,397.30	649,121	521,667	3,274,730		155,349
OTHER MAINTENANCE BUILDINGS						
SURVIVOR CURVE.. IOWA 35-S2.5						
NET SALVAGE PERCENT.. 0						
1935	70.95	71	71			
1941	1,557.22	1,557	1,557			
1942	49.61	50	50			
1944	294.74	295	295			
1946	1,149.25	1,149	1,149			
1947	708.24	708	708			
1951	458.24	458	458			
1961	1,381.20	1,333	1,062	319	2.11	151
1965	68.63	65	52	17	2.64	6
1971	11,899.91	11,024	8,785	3,115	3.85	809
1975	415.60	375	299	117	4.76	25
1982	1,291.60	1,104	880	412	6.36	65
1983	22,423.34	18,907	15,066	7,357	6.79	1,084
1984	3,065.78	2,557	2,038	1,028	7.06	146
1985	23,117.30	19,063	15,191	7,927	7.34	1,080
1986	173.21	141	112	61	7.65	8
1991	14,224.07	10,621	8,464	5,760	9.67	596
1993	37,100.21	26,545	21,153	15,947	10.54	1,513
1995	1,658.28	1,125	896	762	11.60	66
1996	1,855.14	1,225	976	879	12.09	73
1999	11,754.54	7,013	5,588	6,166	13.86	445
2007	25,555.44	9,870	7,865	17,690	19.86	891
2008	1,741.81	623	496	1,245	20.66	60
2010	2,936.88	873	696	2,241	22.45	100

SUEZ WATER PENNSYLVANIA, INC.

ACCOUNT 304.52 STRUCTURES AND IMPROVEMENTS - STORES, SHOP AND GARAGE

CALCULATED REMAINING LIFE DEPRECIATION ACCRUAL
RELATED TO ORIGINAL COST AS OF DECEMBER 31, 2019

YEAR (1)	ORIGINAL COST (2)	CALCULATED ACCRUED (3)	ALLOC. BOOK RESERVE (4)	FUTURE BOOK ACCRUALS (5)	REM. LIFE (6)	ANNUAL ACCRUAL (7)
OTHER MAINTENANCE BUILDINGS						
SURVIVOR CURVE.. IOWA 35-S2.5						
NET SALVAGE PERCENT.. 0						
2012	15,033.95	3,540	2,821	12,213	24.35	502
2018	81,008.48	3,824	3,047	77,961	30.25	2,577
2019	278,839.77	4,406	3,511	275,329	31.24	8,813
	539,833.39	128,522	103,287	436,546		19,010
	4,336,230.69	777,643	624,954	3,711,276		174,359
COMPOSITE REMAINING LIFE AND ANNUAL ACCRUAL RATE, PERCENT ..						21.3 4.02

SUEZ WATER PENNSYLVANIA, INC.

ACCOUNT 304.53 STRUCTURES AND IMPROVEMENTS - MISCELLANEOUS

CALCULATED REMAINING LIFE DEPRECIATION ACCRUAL
RELATED TO ORIGINAL COST AS OF DECEMBER 31, 2019

YEAR (1)	ORIGINAL COST (2)	CALCULATED ACCRUED (3)	ALLOC. BOOK RESERVE (4)	FUTURE BOOK ACCRUALS (5)	REM. LIFE (6)	ANNUAL ACCRUAL (7)
SURVIVOR CURVE.. IOWA 25-S2						
NET SALVAGE PERCENT.. 0						
1993	8,686.57	7,252	6,582	2,105	5.24	402
1997	67,264.23	52,063	47,255	20,009	6.57	3,046
1998	641.74	484	439	203	6.99	29
2000	1,642.71	1,176	1,067	576	7.75	74
2001	101,136.20	69,976	63,514	37,622	8.24	4,566
2002	35,862.41	23,974	21,760	14,102	8.68	1,625
2008	18,638.97	9,111	8,270	10,369	12.03	862
2010	40,316.69	16,699	15,157	25,160	13.44	1,872
2011	21,236.22	7,959	7,224	14,012	14.18	988
2012	15,887.91	5,303	4,813	11,075	14.97	740
2013	3,725.30	1,085	985	2,740	15.82	173
2014	21,399.64	5,296	4,807	16,593	16.72	992
2018	6,750.68	460	417	6,334	20.53	309
2019	8,282.35	188	171	8,111	21.53	377
	351,471.62	201,026	182,461	169,011		16,055

COMPOSITE REMAINING LIFE AND ANNUAL ACCRUAL RATE, PERCENT .. 10.5 4.57

SUEZ WATER PENNSYLVANIA, INC.

ACCOUNT 305 COLLECTING AND IMPOUNDING RESERVOIRS

CALCULATED REMAINING LIFE DEPRECIATION ACCRUAL
RELATED TO ORIGINAL COST AS OF DECEMBER 31, 2019

YEAR (1)	ORIGINAL COST (2)	CALCULATED ACCRUED (3)	ALLOC. BOOK RESERVE (4)	FUTURE BOOK ACCRUALS (5)	REM. LIFE (6)	ANNUAL ACCRUAL (7)
SURVIVOR CURVE.. IOWA 65-S1						
NET SALVAGE PERCENT.. 0						
1896	6,209.00	6,134	5,911	298	1.50	199
1909	27,130.00	25,782	24,844	2,286	5.78	396
1927	38,379.41	34,434	33,181	5,198	10.60	490
1928	4,136.58	3,709	3,574	563	10.54	53
1958	854.62	646	622	233	19.80	12
1982	8,214.00	4,651	4,482	3,732	28.73	130
1983	2,858.00	1,586	1,528	1,330	29.29	45
1985	21,211.00	11,344	10,931	10,280	30.01	343
1986	1,583.00	827	797	786	30.60	26
1992	7,752.00	3,518	3,390	4,362	33.10	132
2010	1.00			1	43.41	
2015	316,303.78	27,613	26,609	289,695	47.05	6,157
	434,632.39	120,244	115,869	318,763		7,983

COMPOSITE REMAINING LIFE AND ANNUAL ACCRUAL RATE, PERCENT .. 39.9 1.84

SUEZ WATER PENNSYLVANIA, INC.

ACCOUNT 306 LAKE, RIVER AND OTHER INTAKES

CALCULATED REMAINING LIFE DEPRECIATION ACCRUAL
RELATED TO ORIGINAL COST AS OF DECEMBER 31, 2019

YEAR (1)	ORIGINAL COST (2)	CALCULATED ACCRUED (3)	ALLOC. BOOK RESERVE (4)	FUTURE BOOK ACCRUALS (5)	REM. LIFE (6)	ANNUAL ACCRUAL (7)
ROCKVILLE INTAKE						
INTERIM SURVIVOR CURVE.. IOWA 65-R2.5						
PROBABLE RETIREMENT YEAR.. 6-2046						
NET SALVAGE PERCENT.. 0						
1970	60,769.70	44,216	37,634	23,136	18.53	1,249
1971	519.14	375	319	200	18.62	11
1982	6,658.72	4,245	3,613	3,046	21.32	143
1985	152,451.68	93,087	79,229	73,223	22.00	3,328
1987	3,615.96	2,139	1,821	1,795	22.45	80
1991	372,508.49	205,960	175,299	197,210	23.05	8,556
1992	83,396.67	45,409	38,649	44,748	23.01	1,945
1997	93,443.11	45,413	38,652	54,791	23.80	2,302
1998	11,586.66	5,506	4,686	6,900	23.75	291
1999	621,894.97	286,818	244,119	377,776	23.95	15,774
2010	5,632.94	1,563	1,330	4,303	24.75	174
2011	12,896.81	3,289	2,799	10,097	24.83	407
2012	2,930.84	679	578	2,353	24.86	95
2013	1,621.58	336	286	1,336	24.85	54
2019	3,232,332.84	65,940	56,123	3,176,209	24.07	131,957
	4,662,260.11	804,975	685,138	3,977,122		166,366
HUMMELSTOWN INTAKE						
INTERIM SURVIVOR CURVE.. IOWA 65-R2.5						
PROBABLE RETIREMENT YEAR.. 6-2061						
NET SALVAGE PERCENT.. 0						
2006	1,335,191.80	373,053	317,516	1,017,676	34.81	29,235
	1,335,191.80	373,053	317,516	1,017,676		29,235
OTHER INTAKES						
SURVIVOR CURVE.. IOWA 50-S1						
NET SALVAGE PERCENT.. 0						
1909	1,166.49	1,166	1,166			
1928	1,872.20	1,833	1,557	315	1.96	161
1933	4,581.51	4,399	3,736	845	3.59	235
1959	38,851.76	32,907	27,949	10,903	10.93	998
1960	638.58	536	455	183	11.42	16
1962	65.57	54	46	20	11.94	2
1965	256.72	207	176	81	13.07	6
1973	1,216.00	910	773	443	15.61	28
1993	6,945.00	3,718	3,158	3,787	23.00	165

SUEZ WATER PENNSYLVANIA, INC.

ACCOUNT 306 LAKE, RIVER AND OTHER INTAKES

CALCULATED REMAINING LIFE DEPRECIATION ACCRUAL
RELATED TO ORIGINAL COST AS OF DECEMBER 31, 2019

YEAR (1)	ORIGINAL COST (2)	CALCULATED ACCRUED (3)	ALLOC. BOOK RESERVE (4)	FUTURE BOOK ACCRUALS (5)	REM. LIFE (6)	ANNUAL ACCRUAL (7)
OTHER INTAKES						
SURVIVOR CURVE.. IOWA 50-S1						
NET SALVAGE PERCENT.. 0						
1996	1,668.00	819	696	972	24.34	40
2002	9,792.71	3,821	3,245	6,547	27.35	239
2004	5,234.37	1,850	1,571	3,663	28.36	129
2006	21,794.95	6,857	5,824	15,971	29.42	543
2007	4,878.99	1,433	1,217	3,662	30.05	122
2008	3,712.03	1,012	860	2,853	30.69	93
2010	2,209.36	508	431	1,778	31.82	56
2013	2,374.00	383	325	2,049	33.82	61
2014	6,048.30	829	704	5,344	34.66	154
2016	396,417.99	34,964	29,696	366,722	36.18	10,136
	509,724.53	98,206	83,586	426,139		13,184
	6,507,176.44	1,276,234	1,086,240	5,420,937		208,785
COMPOSITE REMAINING LIFE AND ANNUAL ACCRUAL RATE, PERCENT .. 26.0						3.21

SUEZ WATER PENNSYLVANIA, INC.

ACCOUNT 307 WELLS AND SPRINGS

CALCULATED REMAINING LIFE DEPRECIATION ACCRUAL
RELATED TO ORIGINAL COST AS OF DECEMBER 31, 2019

YEAR (1)	ORIGINAL COST (2)	CALCULATED ACCRUED (3)	ALLOC. BOOK RESERVE (4)	FUTURE BOOK ACCRUALS (5)	REM. LIFE (6)	ANNUAL ACCRUAL (7)
SURVIVOR CURVE.. IOWA 48-R2						
NET SALVAGE PERCENT.. 0						
1937	2,072.00	2,034	2,072			
1946	1,003.00	951	1,003			
1952	3,832.61	3,518	3,833			
1954	3,296.32	3,001	3,296			
1955	225.00	205	225			
1963	3,667.08	3,170	3,667			
1966	7,300.26	6,132	7,300			
1970	1,574.00	1,278	1,574			
1972	752.69	597	752	1	12.38	
1973	628.00	493	621	7	12.67	1
1977	3,894.00	2,913	3,669	225	14.32	16
1978	3,982.00	2,925	3,684	298	14.99	20
1982	2,708.00	1,869	2,354	354	16.85	21
1984	9,408.64	6,279	7,909	1,500	17.69	85
1985	3,793.00	2,473	3,115	678	18.41	37
1986	46,736.65	29,902	37,666	9,071	18.86	481
1987	26,451.00	16,590	20,898	5,553	19.32	287
1988	37,690.38	23,149	29,160	8,530	19.78	431
1989	36,964.00	22,208	27,974	8,990	20.26	444
1991	49,043.00	27,955	35,214	13,829	21.50	643
1992	4,135.00	2,297	2,893	1,242	22.00	56
1993	71,429.66	38,615	48,642	22,788	22.52	1,012
1994	110,452.00	58,020	73,085	37,367	23.04	1,622
1995	19,745.00	10,062	12,675	7,070	23.58	300
1997	3,715.04	1,772	2,232	1,483	24.67	60
1998	51,372.00	23,528	29,637	21,735	25.45	854
2000	16,796.00	7,140	8,994	7,802	26.37	296
2001	34,771.24	14,152	17,827	16,944	26.95	629
2004	101,589.10	35,587	44,827	56,762	28.75	1,974
2005	105,076.05	34,885	43,943	61,133	29.17	2,096
2006	36,935.28	11,516	14,506	22,429	29.79	753
2007	11,613.99	3,397	4,279	7,335	30.24	243
2008	7,462.99	2,025	2,551	4,912	30.87	159
2009	4,059.00	1,019	1,284	2,775	31.34	89
2010	67,794.29	15,586	19,633	48,161	31.82	1,514
2011	5,963.00	1,241	1,563	4,400	32.32	136
2012	1,879.00	351	442	1,437	32.66	44

SUEZ WATER PENNSYLVANIA, INC.

ACCOUNT 307 WELLS AND SPRINGS

CALCULATED REMAINING LIFE DEPRECIATION ACCRUAL
RELATED TO ORIGINAL COST AS OF DECEMBER 31, 2019

YEAR (1)	ORIGINAL COST (2)	CALCULATED ACCRUED (3)	ALLOC. BOOK RESERVE (4)	FUTURE BOOK ACCRUALS (5)	REM. LIFE (6)	ANNUAL ACCRUAL (7)
SURVIVOR CURVE.. IOWA 48-R2						
NET SALVAGE PERCENT.. 0						
2013	8,751.00	1,433	1,805	6,946	33.18	209
2014	89,646.19	12,622	15,899	73,747	33.56	2,197
2017	29,834.35	2,053	2,586	27,248	33.86	805
	1,028,041.81	434,943	545,289	482,753		17,514
COMPOSITE REMAINING LIFE AND ANNUAL ACCRUAL RATE, PERCENT						27.6 1.70

SUEZ WATER PENNSYLVANIA, INC.

ACCOUNT 308 INFILTRATION GALLERIES AND TUNNELS

CALCULATED REMAINING LIFE DEPRECIATION ACCRUAL
RELATED TO ORIGINAL COST AS OF DECEMBER 31, 2019

YEAR (1)	ORIGINAL COST (2)	CALCULATED ACCRUED (3)	ALLOC. BOOK RESERVE (4)	FUTURE BOOK ACCRUALS (5)	REM. LIFE (6)	ANNUAL ACCRUAL (7)
SURVIVOR CURVE.. IOWA 40-R2.5						
NET SALVAGE PERCENT.. 0						
1989	3,046.00	2,118	1,890	1,156	13.36	87
2016	10,312.04	1,083	967	9,345	29.83	313
	13,358.04	3,201	2,857	10,501		400
COMPOSITE REMAINING LIFE AND ANNUAL ACCRUAL RATE, PERCENT ..						26.3 2.99

SUEZ WATER PENNSYLVANIA, INC.

ACCOUNT 311.2 PUMPING EQUIPMENT - ELECTRIC PUMPING EQUIPMENT

CALCULATED REMAINING LIFE DEPRECIATION ACCRUAL
RELATED TO ORIGINAL COST AS OF DECEMBER 31, 2019

YEAR (1)	ORIGINAL COST (2)	CALCULATED ACCRUED (3)	ALLOC. BOOK RESERVE (4)	FUTURE BOOK ACCRUALS (5)	REM. LIFE (6)	ANNUAL ACCRUAL (7)
SURVIVOR CURVE.. IOWA 36-R0.5						
NET SALVAGE PERCENT.. 0						
1943	125.85	126	126			
1945	0.31					
1946	275.74	276	276			
1947	59.20	59	59			
1950	2,081.56	2,054	2,082			
1951	7.37	7	7			
1952	0.90	1	1			
1954	484.29	463	484			
1955	1,405.32	1,333	1,405			
1957	92.85	87	93			
1958	2,586.44	2,402	2,586			
1959	147.71	137	148			
1960	23.26	21	23			
1961	109.67	100	110			
1962	3,252.94	2,937	3,253			
1963	7,940.25	7,134	7,940			
1964	4,153.92	3,689	4,154			
1965	1,160.72	1,025	1,161			
1966	18,072.43	15,857	18,072			
1967	283.80	247	284			
1968	535.16	460	529	6	8.38	1
1971	5,162.30	4,331	4,980	182	9.31	20
1972	4,944.65	4,110	4,726	219	9.65	23
1973	2,798.24	2,303	2,648	150	10.00	15
1974	28,389.70	23,121	26,584	1,806	10.37	174
1975	13,987.91	11,266	12,953	1,035	10.75	96
1976	9,047.70	7,202	8,281	767	11.15	69
1977	3,041.17	2,404	2,764	277	11.26	25
1978	19,357.40	15,103	17,365	1,992	11.69	170
1979	56,745.44	43,666	50,205	6,540	12.13	539
1980	106,796.31	80,994	93,123	13,673	12.58	1,087
1981	37,324.80	28,023	32,220	5,105	12.78	399
1982	150,808.71	111,417	128,103	22,706	13.26	1,712
1983	28,546.05	20,839	23,960	4,586	13.50	340
1984	361,828.86	259,467	298,324	63,505	14.00	4,536
1985	108,172.38	76,500	87,956	20,216	14.28	1,416
1986	96,127.03	66,981	77,012	19,115	14.58	1,311
1987	73,895.72	50,434	57,987	15,909	15.12	1,052
1988	193,336.00	129,728	149,156	44,180	15.45	2,860
1989	168,032.89	110,700	127,278	40,755	15.80	2,579
1990	261,820.95	169,136	194,465	67,356	16.16	4,168
1991	14,697.89	9,299	10,692	4,006	16.55	242
1992	43,238.40	26,873	30,897	12,341	16.75	737

SUEZ WATER PENNSYLVANIA, INC.

ACCOUNT 311.2 PUMPING EQUIPMENT - ELECTRIC PUMPING EQUIPMENT

CALCULATED REMAINING LIFE DEPRECIATION ACCRUAL
RELATED TO ORIGINAL COST AS OF DECEMBER 31, 2019

YEAR (1)	ORIGINAL COST (2)	CALCULATED ACCRUED (3)	ALLOC. BOOK RESERVE (4)	FUTURE BOOK ACCRUALS (5)	REM. LIFE (6)	ANNUAL ACCRUAL (7)
SURVIVOR CURVE.. IOWA 36-R0.5						
NET SALVAGE PERCENT.. 0						
1993	519,552.63	315,265	362,478	157,075	17.17	9,148
1994	168,250.10	99,537	114,443	53,807	17.60	3,057
1995	50,479.13	29,187	33,558	16,921	17.87	947
1996	114,928.28	64,544	74,210	40,718	18.34	2,220
1997	113,726.53	62,186	71,499	42,228	18.65	2,264
1998	355,273.70	188,650	216,902	138,372	18.99	7,287
1999	1,475,933.04	759,515	873,258	602,675	19.34	31,162
2000	69,711.04	34,800	40,012	29,699	19.56	1,518
2001	193,738.97	93,188	107,144	86,595	19.96	4,338
2002	89,347.49	41,439	47,645	41,702	20.23	2,061
2003	82,705.56	36,986	42,525	40,181	20.40	1,970
2004	13,352.72	5,712	6,567	6,786	20.73	327
2005	229.21	94	108	121	20.96	6
2006	14.50	6	7	8	21.22	
2007	81,359.68	30,005	34,498	46,862	21.40	2,190
2008	92,580.71	32,255	37,085	55,496	21.50	2,581
2009	196,886.41	64,303	73,933	122,953	21.65	5,679
2010	335,780.17	102,077	117,364	218,416	21.75	10,042
2011	115,235.69	32,427	37,283	77,953	21.71	3,591
2012	84,072.22	21,565	24,795	59,277	21.74	2,727
2013	40,282.69	9,321	10,717	29,566	21.59	1,369
2014	126,915.61	25,967	29,856	97,060	21.38	4,540
2015	274,846.33	48,373	55,617	219,229	21.07	10,405
2016	6,267,805.88	912,593	1,049,260	5,218,546	20.54	254,067
2017	1,120,413.57	126,047	144,923	975,491	19.72	49,467
2018	863,883.94	65,137	74,892	788,992	18.38	42,927
2019	1,628,866.07	52,124	59,930	1,568,936	15.12	103,766
	16,307,072.06	4,545,615	5,224,981	11,082,091		583,227
COMPOSITE REMAINING LIFE AND ANNUAL ACCRUAL RATE, PERCENT .. 19.0						3.58

SUEZ WATER PENNSYLVANIA, INC.

ACCOUNT 311.3 PUMPING EQUIPMENT - OIL ENGINE PUMPING EQUIPMENT

CALCULATED REMAINING LIFE DEPRECIATION ACCRUAL
RELATED TO ORIGINAL COST AS OF DECEMBER 31, 2019

YEAR (1)	ORIGINAL COST (2)	CALCULATED ACCRUED (3)	ALLOC. BOOK RESERVE (4)	FUTURE BOOK ACCRUALS (5)	REM. LIFE (6)	ANNUAL ACCRUAL (7)
SURVIVOR CURVE.. IOWA 35-R2						
NET SALVAGE PERCENT.. 0						
1988	886.00	667	868	18	10.34	2
1990	15,911.81	11,547	15,024	888	11.15	80
1993	232,630.00	157,211	204,551	28,079	12.71	2,209
2003	1,598.77	765	995	604	17.98	34
2006	63,129.01	25,656	33,382	29,747	19.72	1,508
	314,155.59	195,846	254,820	59,336		3,833
COMPOSITE REMAINING LIFE AND ANNUAL ACCRUAL RATE, PERCENT ..					15.5	1.22

SUEZ WATER PENNSYLVANIA, INC.

ACCOUNT 320.1 WATER TREATMENT PLANT - STRUCTURES AND IMPROVEMENTS

CALCULATED REMAINING LIFE DEPRECIATION ACCRUAL
RELATED TO ORIGINAL COST AS OF DECEMBER 31, 2019

YEAR (1)	ORIGINAL COST (2)	CALCULATED ACCRUED (3)	ALLOC. BOOK RESERVE (4)	FUTURE BOOK ACCRUALS (5)	REM. LIFE (6)	ANNUAL ACCRUAL (7)
BLOOMSBURG TREATMENT PLANT						
INTERIM SURVIVOR CURVE.. IOWA 50-R1.5						
PROBABLE RETIREMENT YEAR.. 6-2028						
NET SALVAGE PERCENT.. 0						
1992	320,608.00	248,632	313,113	7,495	7.96	942
2000	2,999.53	2,117	2,666	334	8.12	41
2001	12,446.68	8,658	10,903	1,543	8.10	190
2003	2,300.00	1,541	1,941	359	8.13	44
	338,354.21	260,948	328,623	9,731		1,217
BLOOMSBURG TREATMENT PLANT - NEW						
INTERIM SURVIVOR CURVE.. IOWA 50-R1.5						
PROBABLE RETIREMENT YEAR.. 6-2076						
NET SALVAGE PERCENT.. 0						
2016	13,426,911.63	1,344,034	1,692,601	11,734,311	31.47	372,873
2019	552,157.98	10,160	12,795	539,363	26.67	20,224
	13,979,069.61	1,354,194	1,705,396	12,273,674		393,097
SIXTH STREET PLANT						
INTERIM SURVIVOR CURVE.. IOWA 50-R1.5						
PROBABLE RETIREMENT YEAR.. 6-2045						
NET SALVAGE PERCENT.. 0						
1964	81,675.19	67,088	81,675	.		
1974	32,131.63	24,269	30,577	1,554	14.74	105
1975	21,092.40	15,769	19,868	1,225	15.02	82
1980	348,128.00	246,126	310,102	38,026	16.37	2,323
1982	39,713.25	27,251	34,334	5,379	17.15	314
1983	32,579.35	22,118	27,867	4,712	17.26	273
1984	1,120.15	752	947	173	17.41	10
1985	10,728.28	7,070	8,908	1,821	17.85	102
1986	811.60	527	664	148	18.05	8
1987	5,042.22	3,228	4,067	975	18.26	53
1988	2,472.97	1,558	1,963	510	18.50	28
1989	21,577.97	13,361	16,834	4,744	18.76	253
1990	34,063.19	20,799	26,205	7,858	18.81	418
1991	62,531.81	37,425	47,153	15,379	19.12	804
1992	45,096.50	26,539	33,437	11,659	19.23	606
1993	2,191,486.68	1,266,022	1,595,100	596,387	19.37	30,789
1994	161,640.28	91,100	114,780	46,861	19.75	2,373
1995	4,646.21	2,573	3,242	1,404	19.75	71

SUEZ WATER PENNSYLVANIA, INC.

ACCOUNT 320.1 WATER TREATMENT PLANT - STRUCTURES AND IMPROVEMENTS

CALCULATED REMAINING LIFE DEPRECIATION ACCRUAL
RELATED TO ORIGINAL COST AS OF DECEMBER 31, 2019

YEAR (1)	ORIGINAL COST (2)	CALCULATED ACCRUED (3)	ALLOC. BOOK RESERVE (4)	FUTURE BOOK ACCRUALS (5)	REM. LIFE (6)	ANNUAL ACCRUAL (7)
SIXTH STREET PLANT						
INTERIM SURVIVOR CURVE.. IOWA 50-R1.5						
PROBABLE RETIREMENT YEAR.. 6-2045						
NET SALVAGE PERCENT.. 0						
1996	181,717.17	98,218	123,748	57,969	19.98	2,901
1997	10,794.04	5,683	7,160	3,634	20.24	180
1998	217,411.80	111,706	140,742	76,670	20.34	3,769
1999	292,549.81	146,333	184,369	108,180	20.48	5,282
2000	20,652.75	10,068	12,685	7,968	20.50	389
2001	55,068.91	25,982	32,736	22,333	20.71	1,078
2002	208,135.68	95,076	119,789	88,346	20.81	4,245
2003	99,562.90	43,867	55,269	44,294	20.95	2,114
2004	210,806.99	89,530	112,802	98,005	21.00	4,667
2005	4,651,916.00	1,895,191	2,387,810	2,264,106	21.09	107,354
2006	614,248.14	238,820	300,897	313,351	21.22	14,767
2008	329,345.87	115,535	145,566	183,780	21.29	8,632
2009	11,929.85	3,933	4,955	6,975	21.35	327
2010	95,443.52	29,378	37,014	58,429	21.36	2,735
2011	33,997.10	9,652	12,161	21,836	21.44	1,018
2012	37,523.69	9,737	12,268	25,256	21.40	1,180
2013	22,791.19	5,319	6,702	16,090	21.35	754
2014	55,523.75	11,393	14,354	41,169	21.31	1,932
2015	2,198.41	385	485	1,713	21.21	81
2016	198,380.14	28,249	35,592	162,788	21.07	7,726
2017	17,499.07	1,876	2,364	15,135	20.81	727
2018	101,179.49	6,961	8,770	92,409	20.29	4,554
2019	110,431.60	2,849	3,590	106,842	18.84	5,671
	10,675,645.55	4,859,316	6,119,551	4,556,095		220,695

RICHARD C. RABOLD PLANT
INTERIM SURVIVOR CURVE.. IOWA 50-R1.5
PROBABLE RETIREMENT YEAR.. 6-2043
NET SALVAGE PERCENT.. 0

1909	9,947.61	9,948	9,948			
1933	6,834.00	6,503	6,834			
1934	1.69	2	2			
1960	508.33	429	508			
1976	240,408.00	178,815	225,931	14,477	14.98	966
1977	16,375.00	12,039	15,211	1,164	15.31	76
1982	3,104.00	2,165	2,735	369	16.26	23
1985	100.00	67	85	15	17.05	1
1989	2,151.00	1,358	1,716	435	17.81	24

SUEZ WATER PENNSYLVANIA, INC.

ACCOUNT 320.1 WATER TREATMENT PLANT - STRUCTURES AND IMPROVEMENTS

CALCULATED REMAINING LIFE DEPRECIATION ACCRUAL
RELATED TO ORIGINAL COST AS OF DECEMBER 31, 2019

YEAR (1)	ORIGINAL COST (2)	CALCULATED ACCRUED (3)	ALLOC. BOOK RESERVE (4)	FUTURE BOOK ACCRUALS (5)	REM. LIFE (6)	ANNUAL ACCRUAL (7)
RICHARD C. RABOLD PLANT						
INTERIM SURVIVOR CURVE.. IOWA 50-R1.5						
PROBABLE RETIREMENT YEAR.. 6-2043						
NET SALVAGE PERCENT.. 0						
1990	9,634.00	5,996	7,576	2,058	17.90	115
1992	132,703.00	79,555	100,517	32,186	18.37	1,752
1993	1,041,144.39	612,505	773,893	267,251	18.55	14,407
1994	8,888.00	5,144	6,499	2,389	18.56	129
2009	1,555.49	534	675	881	20.08	44
2010	30,682.16	9,852	12,448	18,234	20.09	908
2011	29,496.46	8,749	11,054	18,442	20.15	915
2013	2,626.71	642	811	1,816	20.10	90
2015	207,777.52	38,231	48,304	159,473	19.95	7,994
2016	9,069.23	1,362	1,721	7,348	19.81	371
2017	3,578.56	405	512	3,067	19.58	157
	1,756,585.15	974,301	1,226,980	529,605		27,972

MARKET STREET PLANT
INTERIM SURVIVOR CURVE.. IOWA 50-R1.5
PROBABLE RETIREMENT YEAR.. 6-2024
NET SALVAGE PERCENT.. 0

1964	17,630.97	16,439	17,631			
1965	210.25	196	210			
1968	1,834.00	1,700	1,834			
1985	2,151.00	1,915	2,151			
1986	4,743.00	4,195	4,743			
1987	1,012.00	891	1,012			
1988	1,547.00	1,360	1,547			
1989	13,488.00	11,807	13,488			
1991	1,081.00	937	1,081			
1992	1,799.00	1,553	1,799			
2000	3,226.59	2,630	3,227			
2001	7,336.96	5,931	7,337			
2002	42,716.60	34,088	42,717			
2004	19,675.42	15,309	19,675			
2009	3,704.45	2,606	3,668	37	4.43	8
2011	276.59	182	256	20	4.44	5
2013	35,393.07	21,052	29,629	5,764	4.43	1,301
2014	4,741.09	2,626	3,696	1,045	4.43	236
2015	30,054.86	15,148	21,320	8,735	4.43	1,972
	192,621.85	140,565	177,020	15,602		3,522

SUEZ WATER PENNSYLVANIA, INC.

ACCOUNT 320.1 WATER TREATMENT PLANT - STRUCTURES AND IMPROVEMENTS

CALCULATED REMAINING LIFE DEPRECIATION ACCRUAL
RELATED TO ORIGINAL COST AS OF DECEMBER 31, 2019

YEAR (1)	ORIGINAL COST (2)	CALCULATED ACCRUED (3)	ALLOC. BOOK RESERVE (4)	FUTURE BOOK ACCRUALS (5)	REM. LIFE (6)	ANNUAL ACCRUAL (7)
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OLD HUMMELSTOWN PLANT
FULLY ACCRUED

1908	4,950.55	4,951	4,951			
1917	207.30	207	207			
1922	7,324.97	7,325	7,325			
1931	181.24	181	181			
1954	206.47	206	206			
1960	517.38	517	517			
1962	1,554.21	1,554	1,554			
1971	56,762.98	56,763	56,763			
1977	47,799.00	47,799	47,799			
1978	29,711.00	29,711	29,711			
1979	13,197.00	13,197	13,197			
1980	17,683.18	17,683	17,683			
1981	52,998.00	52,998	52,998			
1982	3,640.00	3,640	3,640			
1983	31,609.00	31,609	31,609			
1984	32,262.00	32,262	32,262			
1985	914.00	914	914			
1986	7,375.00	7,375	7,375			
1987	5,303.00	5,303	5,303			
1990	64,666.00	64,666	64,666			
1991	235,997.00	235,997	235,997			
1992	11,868.00	11,868	11,868			
1994	31,554.00	31,554	31,554			
1999	139,931.86	139,932	139,932			
2000	30,976.50	30,976	30,976			
2001	25,263.56	25,264	25,264			
2003	526.26	526	526			
2004	3,454.18	3,454	3,455			
	858,433.64	858,432	858,434			

HUMMELSTOWN MEMBRANE PLANT
INTERIM SURVIVOR CURVE.. IOWA 50-R1.5
PROBABLE RETIREMENT YEAR.. 6-2061
NET SALVAGE PERCENT.. 0

2006	7,934,795.16	2,581,982	3,425,685	4,509,111	27.99	161,097
2009	2,669.33	718	953	1,717	28.56	60
2010	35,133.40	8,745	11,603	23,531	28.67	821
2011	1,444,914.45	329,152	436,708	1,008,207	28.81	34,995

SUEZ WATER PENNSYLVANIA, INC.

ACCOUNT 320.1 WATER TREATMENT PLANT - STRUCTURES AND IMPROVEMENTS

CALCULATED REMAINING LIFE DEPRECIATION ACCRUAL
RELATED TO ORIGINAL COST AS OF DECEMBER 31, 2019

YEAR (1)	ORIGINAL COST (2)	CALCULATED ACCRUED (3)	ALLOC. BOOK RESERVE (4)	FUTURE BOOK ACCRUALS (5)	REM. LIFE (6)	ANNUAL ACCRUAL (7)
HUMMELSTOWN MEMBRANE PLANT						
INTERIM SURVIVOR CURVE.. IOWA 50-R1.5						
PROBABLE RETIREMENT YEAR.. 6-2061						
NET SALVAGE PERCENT.. 0						
2014	13,281.37	2,133	2,830	10,451	28.75	364
2015	7,484.41	1,017	1,349	6,135	28.61	214
2017	31,104.26	2,566	3,404	27,700	27.80	996
	9,469,382.38	2,926,313	3,882,531	5,586,851		198,547
OTHER TREATMENT FACILITIES						
SURVIVOR CURVE.. IOWA 40-R1.5						
NET SALVAGE PERCENT.. 0						
1929	17,412.05	17,412	17,412			
1957	0.31		0			
1958	54,748.74	50,506	54,749			
1959	2,391.51	2,199	2,392			
1960	5,199.01	4,764	5,199			
1962	7,761.03	7,007	7,761			
1973	165.00	137	165			
1978	29,680.00	23,524	29,680			
1980	1,393.00	1,073	1,393			
1984	13,333.00	9,704	13,333			
1996	8,770.54	4,864	6,871	1,900	18.87	101
1997	181,545.78	97,635	137,916	43,630	19.34	2,256
1998	1,566.87	815	1,151	416	19.82	21
1999	234.62	118	167	68	20.32	3
2000	7,376.25	3,567	5,039	2,338	20.82	112
2002	2,576.89	1,145	1,617	960	21.87	44
2003	697.56	297	420	278	22.26	12
2004	5,135.24	2,078	2,935	2,200	22.81	96
2005	11,600.36	4,457	6,296	5,305	23.24	228
2006	160,137.20	58,162	82,158	77,980	23.67	3,294
2007	5,709.50	1,948	2,752	2,958	24.13	123
2008	7,640.13	2,443	3,451	4,189	24.47	171
2009	66,155.35	19,661	27,772	38,383	24.83	1,546
2010	85,835.83	23,485	33,174	52,662	25.22	2,088
2011	80,156.71	19,959	28,193	51,963	25.63	2,027
2012	38,415.82	8,644	12,210	26,206	25.83	1,015
2013	2,979.47	595	840	2,139	26.07	82
2014	3,493.68	605	855	2,639	26.25	101

SUEZ WATER PENNSYLVANIA, INC.

ACCOUNT 320.1 WATER TREATMENT PLANT - STRUCTURES AND IMPROVEMENTS

CALCULATED REMAINING LIFE DEPRECIATION ACCRUAL
RELATED TO ORIGINAL COST AS OF DECEMBER 31, 2019

YEAR (1)	ORIGINAL COST (2)	CALCULATED ACCRUED (3)	ALLOC. BOOK RESERVE (4)	FUTURE BOOK ACCRUALS (5)	REM. LIFE (6)	ANNUAL ACCRUAL (7)
OTHER TREATMENT FACILITIES						
SURVIVOR CURVE.. IOWA 40-R1.5						
NET SALVAGE PERCENT.. 0						
2015	7,510.33	1,098	1,551	5,959	26.27	227
2016	16,095.96	1,893	2,674	13,422	26.26	511
2017	67,096.45	5,904	8,340	58,757	25.91	2,268
	892,814.19	375,699	498,465	394,349		16,326
	38,162,906.58	11,749,768	14,797,000	23,365,907		861,376
COMPOSITE REMAINING LIFE AND ANNUAL ACCRUAL RATE, PERCENT ..						27.1 2.26

SUEZ WATER PENNSYLVANIA, INC.

ACCOUNT 320.2 WATER TREATMENT PLANT - PAINTING

CALCULATED REMAINING LIFE DEPRECIATION ACCRUAL
RELATED TO ORIGINAL COST AS OF DECEMBER 31, 2019

YEAR (1)	ORIGINAL COST (2)	CALCULATED ACCRUED (3)	ALLOC. BOOK RESERVE (4)	FUTURE BOOK ACCRUALS (5)	REM. LIFE (6)	ANNUAL ACCRUAL (7)
SURVIVOR CURVE.. 10-SQUARE						
NET SALVAGE PERCENT.. 0						
2002	44,639.80	44,640	44,640			
2004	1,505.51	1,506	1,506			
2011	82,942.78	70,501	71,397	11,546	1.50	7,697
2015	318,436.73	143,297	145,119	173,318	5.50	31,512
	447,524.82	259,944	262,662	184,863		39,209
COMPOSITE REMAINING LIFE AND ANNUAL ACCRUAL RATE, PERCENT ..						4.7 8.76

SUEZ WATER PENNSYLVANIA, INC.

ACCOUNT 320.3 WATER TREATMENT PLANT - CHEMICAL EQUIPMENT

CALCULATED REMAINING LIFE DEPRECIATION ACCRUAL
RELATED TO ORIGINAL COST AS OF DECEMBER 31, 2019

YEAR (1)	ORIGINAL COST (2)	CALCULATED ACCRUED (3)	ALLOC. BOOK RESERVE (4)	FUTURE BOOK ACCRUALS (5)	REM. LIFE (6)	ANNUAL ACCRUAL (7)
SURVIVOR CURVE.. IOWA 25-S0.5						
NET SALVAGE PERCENT.. 0						
1963	424.33	424	424			
1964	473.86	474	474			
1967	1,114.51	1,115	1,115			
1968	544.51	545	545			
1971	476.09	471	187	289	0.52	289
1972	1,362.62	1,340	531	832	0.81	832
1973	218.92	214	85	134	1.12	120
1974	8,770.38	8,500	3,367	5,403	1.45	3,726
1975	6,305.24	6,061	2,401	3,904	1.80	2,169
1976	7,075.39	6,740	2,670	4,405	2.16	2,039
1977	87.14	82	32	55	2.55	22
1978	1,149.95	1,079	427	723	2.75	263
1979	3,168.36	2,938	1,164	2,004	3.17	632
1980	54,084.36	49,779	19,721	34,363	3.42	10,048
1981	997.14	910	361	636	3.70	172
1982	33,535.42	30,309	12,008	21,527	3.99	5,395
1983	3,905.31	3,492	1,383	2,522	4.32	584
1984	7,828.42	6,920	2,742	5,086	4.66	1,091
1985	22,606.26	19,731	7,817	14,789	5.03	2,940
1986	21,482.68	18,567	7,356	14,127	5.26	2,686
1987	31,955.11	27,315	10,822	21,133	5.52	3,828
1988	7,947.62	6,684	2,648	5,300	5.96	889
1989	14,373.95	11,925	4,724	9,650	6.26	1,542
1990	34,166.00	28,020	11,101	23,065	6.47	3,565
1991	4,173.09	3,366	1,334	2,839	6.83	416
1993	2,532.20	1,973	782	1,750	7.51	233
1994	18,014.98	13,781	5,460	12,555	7.83	1,603
1995	73,816.32	55,340	21,924	51,892	8.18	6,344
1996	23,916.76	17,593	6,970	16,947	8.45	2,006
1997	1,294,221.54	931,840	369,173	925,049	8.75	105,720
1998	8,705.78	6,102	2,417	6,289	9.17	686
1999	24,224.05	16,586	6,571	17,653	9.44	1,870
2000	43,026.88	28,613	11,336	31,691	9.82	3,227
2001	16,998.34	10,974	4,348	12,650	10.15	1,246
2002	102,986.52	64,346	25,492	77,495	10.51	7,373
2003	9,221.10	5,569	2,206	7,015	10.82	648
2004	30,725.31	17,811	7,056	23,669	11.24	2,106
2005	630,026.60	350,799	138,978	491,049	11.54	42,552
2006	662,204.75	351,366	139,203	523,002	11.94	43,803
2007	147,836.67	74,480	29,507	118,330	12.31	9,613
2008	19,346.85	9,190	3,641	15,706	12.71	1,236
2009	287,787.59	128,123	50,759	237,029	13.08	18,121
2010	402,910.99	166,886	66,116	336,795	13.44	25,059

SUEZ WATER PENNSYLVANIA, INC.

ACCOUNT 320.3 WATER TREATMENT PLANT - CHEMICAL EQUIPMENT

CALCULATED REMAINING LIFE DEPRECIATION ACCRUAL
RELATED TO ORIGINAL COST AS OF DECEMBER 31, 2019

YEAR (1)	ORIGINAL COST (2)	CALCULATED ACCRUED (3)	ALLOC. BOOK RESERVE (4)	FUTURE BOOK ACCRUALS (5)	REM. LIFE (6)	ANNUAL ACCRUAL (7)
SURVIVOR CURVE.. IOWA 25-S0.5						
NET SALVAGE PERCENT.. 0						
2011	141,748.70	53,865	21,340	120,409	13.87	8,681
2012	37,010.39	12,769	5,059	31,951	14.24	2,244
2013	11,372.16	3,496	1,385	9,987	14.64	682
2014	101,773.24	27,204	10,778	90,995	15.08	6,034
2015	19,713.76	4,443	1,760	17,954	15.46	1,161
2016	1,890,260.95	341,381	135,247	1,755,014	15.88	110,517
2017	120,680.28	16,050	6,359	114,321	16.30	7,014
2018	224,666.21	18,535	7,343	217,323	16.68	13,029
2019	1,822,121.36	52,113	20,646	1,801,475	16.98	106,094
	8,436,076.94	3,018,229	1,197,295	7,238,782		572,150
COMPOSITE REMAINING LIFE AND ANNUAL ACCRUAL RATE, PERCENT ..						12.7 6.78

SUEZ WATER PENNSYLVANIA, INC.

ACCOUNT 330 DISTRIBUTION RESERVOIRS AND STANDPIPES

CALCULATED REMAINING LIFE DEPRECIATION ACCRUAL
RELATED TO ORIGINAL COST AS OF DECEMBER 31, 2019

YEAR (1)	ORIGINAL COST (2)	CALCULATED ACCRUED (3)	ALLOC. BOOK RESERVE (4)	FUTURE BOOK ACCRUALS (5)	REM. LIFE (6)	ANNUAL ACCRUAL (7)
SURVIVOR CURVE.. IOWA 45-R1.5						
NET SALVAGE PERCENT.. 0						
1928	74.75	75	75			
1931	687.48	681	687			
1933	35.42	35	35			
1936	6,943.61	6,784	6,895	49	1.97	25
1941	5,402.69	5,174	5,258	145	3.47	42
1942	317.24	302	307	10	3.80	3
1943	540.46	513	521	19	4.15	5
1952	1,366.27	1,254	1,274	92	6.03	15
1954	0.20					
1955	608.02	549	558	50	6.93	7
1957	125.32	112	114	11	7.43	1
1960	2,731.39	2,405	2,444	287	8.07	36
1961	38,550.62	33,601	34,150	4,401	8.62	511
1962	1,662.73	1,444	1,468	195	8.73	22
1963	46,044.78	39,543	40,189	5,856	9.29	630
1965	1,832.59	1,558	1,583	250	9.60	26
1967	21,372.67	17,842	18,133	3,240	10.39	312
1968	1,574.37	1,305	1,326	248	10.61	23
1969	41,872.97	34,470	35,033	6,840	10.85	630
1970	2,910.82	2,363	2,402	509	11.48	44
1972	4,380.21	3,495	3,552	828	12.02	69
1973	26,369.96	20,845	21,185	5,185	12.32	421
1974	20,584.37	16,109	16,372	4,212	12.64	333
1975	8,507.75	6,549	6,656	1,852	13.31	139
1976	9,350.41	7,118	7,234	2,116	13.65	155
1977	591.37	445	452	139	14.00	10
1979	672.55	493	501	172	14.75	12
1980	51,803.75	37,444	38,056	13,748	15.15	907
1982	92,671.99	64,982	66,043	26,629	15.98	1,666
1983	13,589.43	9,374	9,527	4,062	16.41	248
1984	134,311.59	90,593	92,073	42,239	17.13	2,466
1985	245,771.92	162,799	165,458	80,314	17.58	4,568
1986	134,966.81	87,715	89,148	45,819	18.05	2,538
1987	18,215.47	11,662	11,852	6,363	18.26	348
1988	235,365.67	147,527	149,936	85,430	18.75	4,556
1989	90,341.81	55,380	56,284	34,058	19.25	1,769
1990	287,517.91	172,166	174,978	112,540	19.76	5,695
1991	402,826.26	235,331	239,174	163,652	20.28	8,070
1992	106,847.65	60,818	61,811	45,037	20.81	2,164
1993	88,033.77	48,753	49,549	38,485	21.35	1,803
1994	191,377.09	103,458	105,148	86,229	21.67	3,979
1995	124,368.20	65,206	66,271	58,097	22.23	2,613
1996	68,932.44	34,990	35,561	33,371	22.80	1,464

SUEZ WATER PENNSYLVANIA, INC.

ACCOUNT 330 DISTRIBUTION RESERVOIRS AND STANDPIPES

CALCULATED REMAINING LIFE DEPRECIATION ACCRUAL
RELATED TO ORIGINAL COST AS OF DECEMBER 31, 2019

YEAR (1)	ORIGINAL COST (2)	CALCULATED ACCRUED (3)	ALLOC. BOOK RESERVE (4)	FUTURE BOOK ACCRUALS (5)	REM. LIFE (6)	ANNUAL ACCRUAL (7)
SURVIVOR CURVE.. IOWA 45-R1.5						
NET SALVAGE PERCENT.. 0						
1997	52,807.41	26,023	26,448	26,359	23.16	1,138
1998	164,732.99	78,281	79,560	85,173	23.75	3,586
2000	236,268.10	104,123	105,824	130,444	24.75	5,270
2001	63,553.76	26,921	27,361	36,193	25.17	1,438
2002	89,972.84	36,529	37,126	52,847	25.60	2,064
2003	14,440.82	5,600	5,691	8,750	26.05	336
2004	422,952.55	156,027	158,575	264,378	26.52	9,969
2005	10,002.19	3,495	3,552	6,450	27.00	239
2006	258,323.32	85,453	86,849	171,474	27.31	6,279
2007	20,495.89	6,354	6,458	14,038	27.82	505
2008	38,056.93	11,029	11,209	26,848	28.18	953
2009	1,805,862.88	487,222	495,179	1,310,684	28.41	46,135
2010	3,088,154.91	765,862	778,370	2,309,785	28.81	80,173
2011	65,385.79	14,784	15,025	50,361	29.09	1,731
2014	3,581.05	562	571	3,010	29.59	102
2015	257,847.86	33,984	34,539	223,309	29.63	7,537
2016	181,396.58	19,301	19,616	161,781	29.39	5,505
2017	332,359.61	26,423	26,855	305,505	28.95	10,553
2018	1,855,731.99	94,271	95,811	1,759,921	28.00	62,854
2019	2,319,063.54	45,454	46,196	2,272,868	25.07	90,661
	13,813,043.79	3,620,960	3,680,088	10,132,956		385,353
COMPOSITE REMAINING LIFE AND ANNUAL ACCRUAL RATE, PERCENT ..						26.3 2.79

SUEZ WATER PENNSYLVANIA, INC.

ACCOUNT 331 TRANSMISSION AND DISTRIBUTION MAINS

CALCULATED REMAINING LIFE DEPRECIATION ACCRUAL
RELATED TO ORIGINAL COST AS OF DECEMBER 31, 2019

YEAR (1)	ORIGINAL COST (2)	CALCULATED ACCRUED (3)	ALLOC. BOOK RESERVE (4)	FUTURE BOOK ACCRUALS (5)	REM. LIFE (6)	ANNUAL ACCRUAL (7)
SURVIVOR CURVE.. IOWA 80-R3						
NET SALVAGE PERCENT.. 0						
1920	743.09	688	393	350	8.02	44
1921	458.51	420	240	219	9.03	24
1922	643.35	590	337	306	8.88	34
1923	514.85	467	267	248	9.88	25
1924	1,326.63	1,204	689	638	9.77	65
1925	4,729.30	4,290	2,453	2,276	9.67	235
1926	741.25	665	380	361	10.67	34
1927	12,009.61	10,775	6,162	5,848	10.60	552
1928	10,569.57	9,478	5,420	5,150	10.54	489
1929	8,387.43	7,439	4,254	4,133	11.54	358
1930	7,350.13	6,512	3,724	3,626	11.52	315
1931	2,565.81	2,271	1,299	1,267	11.50	110
1932	1,100.39	963	551	549	12.50	44
1933	2,808.18	2,453	1,403	1,405	12.51	112
1934	3,535.47	3,083	1,763	1,772	12.54	141
1935	4,747.82	4,092	2,340	2,408	13.54	178
1936	4,265.94	3,669	2,098	2,168	13.59	160
1937	9,763.46	8,377	4,791	4,972	13.65	364
1938	8,565.98	7,261	4,152	4,414	14.65	301
1939	16,672.93	14,092	8,059	8,614	14.74	584
1940	4,012.82	3,382	1,934	2,079	14.84	140
1941	9,411.60	7,831	4,478	4,934	15.84	311
1942	11,851.00	9,827	5,620	6,231	15.96	390
1943	1,564.41	1,293	739	825	16.09	51
1944	7,764.35	6,331	3,621	4,143	17.09	242
1945	4,641.73	3,769	2,155	2,487	17.25	144
1946	18,559.19	14,870	8,504	10,055	18.24	551
1947	26,750.76	21,334	12,201	14,550	18.41	790
1948	48,758.59	38,695	22,129	26,630	18.59	1,432
1949	681.04	533	305	376	19.59	19
1950	20,430.34	15,903	9,095	11,335	19.79	573
1951	28,689.66	22,011	12,588	16,102	20.79	775
1952	49,633.26	37,860	21,651	27,982	20.99	1,333
1953	21,547.66	16,335	9,342	12,206	21.22	575
1954	9,041.44	6,751	3,861	5,180	22.22	233
1955	2,581.74	1,915	1,095	1,487	22.45	66
1956	43,664.85	31,884	18,234	25,431	23.46	1,084
1957	35,352.26	25,630	14,657	20,695	23.71	873
1958	99,465.84	71,576	40,933	58,533	23.97	2,442
1959	220,865.92	156,329	89,402	131,464	24.97	5,265
1960	282,807.72	198,559	113,552	169,256	25.25	6,703
1961	185,121.18	127,789	73,080	112,041	26.25	4,268
1962	107,237.59	73,372	41,960	65,278	26.54	2,460

SUEZ WATER PENNSYLVANIA, INC.

ACCOUNT 331 TRANSMISSION AND DISTRIBUTION MAINS

CALCULATED REMAINING LIFE DEPRECIATION ACCRUAL
RELATED TO ORIGINAL COST AS OF DECEMBER 31, 2019

YEAR (1)	ORIGINAL COST (2)	CALCULATED ACCRUED (3)	ALLOC. BOOK RESERVE (4)	FUTURE BOOK ACCRUALS (5)	REM. LIFE (6)	ANNUAL ACCRUAL (7)
SURVIVOR CURVE.. IOWA 80-R3						
NET SALVAGE PERCENT.. 0						
1963	255,041.32	171,490	98,072	156,969	27.53	5,702
1964	514,731.23	342,811	196,048	318,683	27.83	11,451
1965	54,771.48	35,821	20,485	34,286	28.83	1,189
1966	254,638.04	164,853	94,277	160,361	29.14	5,503
1967	221,412.29	140,641	80,430	140,982	30.15	4,676
1968	194,927.85	122,473	70,040	124,888	30.47	4,099
1969	344,407.57	213,946	122,352	222,056	30.80	7,210
1970	531,031.44	323,292	184,885	346,146	31.80	10,885
1971	345,561.23	207,821	118,849	226,712	32.15	7,052
1972	384,454.38	226,444	129,499	254,955	33.15	7,691
1973	744,252.09	432,559	247,373	496,879	33.50	14,832
1974	452,578.12	257,426	147,218	305,360	34.50	8,851
1975	721,730.78	404,674	231,426	490,305	34.87	14,061
1976	343,175.77	188,095	107,568	235,608	35.87	6,568
1977	574,340.00	310,029	177,300	397,040	36.24	10,956
1978	1,203,787.09	634,396	362,800	840,987	37.24	22,583
1979	481,620.46	249,672	142,783	338,837	37.62	9,007
1980	607,367.73	307,085	175,617	431,751	38.62	11,179
1981	431,280.73	214,174	122,482	308,799	39.02	7,914
1982	632,121.85	305,821	174,894	457,228	40.02	11,425
1983	466,688.79	219,717	125,652	341,037	41.02	8,314
1984	858,486.38	396,191	226,575	631,911	41.42	15,256
1985	1,616,455.13	724,980	414,604	1,201,851	42.42	28,332
1986	921,297.82	404,265	231,192	690,106	42.84	16,109
1987	2,955,158.40	1,258,306	719,604	2,235,554	43.83	51,005
1988	2,094,937.56	871,075	498,153	1,596,785	44.26	36,077
1989	2,211,107.60	890,192	509,086	1,702,022	45.26	37,605
1990	2,124,990.65	833,846	476,862	1,648,129	45.68	36,080
1991	2,219,524.66	841,200	481,068	1,738,457	46.69	37,234
1992	963,318.91	354,983	203,009	760,310	47.13	16,132
1993	1,660,964.56	589,809	337,302	1,323,663	48.13	27,502
1994	2,549,308.22	871,099	498,167	2,051,141	49.13	41,749
1995	1,752,250.17	579,644	331,488	1,420,762	49.57	28,662
1996	1,324,421.25	420,106	240,251	1,084,170	50.58	21,435
1997	3,242,082.57	992,077	567,352	2,674,731	51.03	52,415
1998	3,076,716.50	899,632	514,484	2,562,232	52.03	49,245
1999	2,792,259.19	778,482	445,200	2,347,059	53.03	44,259
2000	4,189,813.53	1,119,518	640,233	3,549,581	53.49	66,360
2001	3,455,053.10	875,510	500,689	2,954,364	54.50	54,209
2002	1,985,413.93	479,477	274,205	1,711,209	54.96	31,136
2003	4,221,460.50	961,227	549,709	3,671,752	55.96	65,614
2004	2,538,448.60	542,974	310,518	2,227,931	56.96	39,114
2005	3,335,461.18	672,429	384,551	2,950,910	57.44	51,374

SUEZ WATER PENNSYLVANIA, INC.

ACCOUNT 331 TRANSMISSION AND DISTRIBUTION MAINS

CALCULATED REMAINING LIFE DEPRECIATION ACCRUAL
RELATED TO ORIGINAL COST AS OF DECEMBER 31, 2019

YEAR (1)	ORIGINAL COST (2)	CALCULATED ACCRUED (3)	ALLOC. BOOK RESERVE (4)	FUTURE BOOK ACCRUALS (5)	REM. LIFE (6)	ANNUAL ACCRUAL (7)
SURVIVOR CURVE.. IOWA 80-R3						
NET SALVAGE PERCENT.. 0						
2006	5,738,830.64	1,076,605	615,692	5,123,139	58.45	87,650
2007	3,857,309.68	675,029	386,037	3,471,273	58.93	58,905
2008	6,125,162.97	986,151	563,963	5,561,200	59.93	92,795
2009	4,528,358.29	665,669	380,685	4,147,673	60.93	68,073
2010	5,475,422.71	733,707	419,594	5,055,829	61.42	82,316
2011	5,946,019.79	712,333	407,371	5,538,649	62.43	88,718
2012	6,034,420.94	642,666	367,530	5,666,891	62.92	90,065
2013	2,367,515.27	218,522	124,969	2,242,546	63.92	35,084
2014	8,363,625.75	657,381	375,945	7,987,681	64.43	123,975
2015	6,681,034.63	430,259	246,058	6,434,977	65.43	98,349
2016	9,406,915.69	474,109	271,135	9,135,781	65.94	138,547
2017	14,954,490.07	541,353	309,590	14,644,900	66.47	220,323
2018	20,726,910.25	453,919	259,588	20,467,322	66.99	305,528
2019	28,695,650.49	212,348	121,438	28,574,212	66.62	428,913
	192,092,452.47	31,292,881	17,895,858	174,196,594		2,992,182
COMPOSITE REMAINING LIFE AND ANNUAL ACCRUAL RATE, PERCENT ..						58.2 1.56

SUEZ WATER PENNSYLVANIA, INC.

ACCOUNT 333 SERVICES

CALCULATED REMAINING LIFE DEPRECIATION ACCRUAL
RELATED TO ORIGINAL COST AS OF DECEMBER 31, 2019

YEAR (1)	ORIGINAL COST (2)	CALCULATED ACCRUED (3)	ALLOC. BOOK RESERVE (4)	FUTURE BOOK ACCRUALS (5)	REM. LIFE (6)	ANNUAL ACCRUAL (7)
SURVIVOR CURVE.. IOWA 60-S2.5						
NET SALVAGE PERCENT.. 0						
1921	15.65	15	15	1	3.54	
1922	823.50	787	794	30	4.54	7
1923	277.50	265	267	10	4.51	2
1924	218.94	209	211	8	4.50	2
1925	899.58	859	866	34	4.51	8
1927	116.89	111	112	5	4.58	1
1928	84.83	81	82	3	4.65	1
1930	79.31	75	76	3	5.73	1
1931	37.44	35	35	2	5.84	
1932	110.66	104	105	6	5.96	1
1933	88.28	82	83	5	6.09	1
1934	123.23	115	116	7	6.24	1
1935	710.30	660	666	44	6.41	7
1936	337.89	313	316	22	6.59	3
1937	3.28	3	3			
1938	46.12	42	42	4	6.99	1
1939	225.20	207	209	16	7.22	2
1940	3,502.95	3,202	3,229	274	7.46	37
1941	448.56	408	411	38	7.71	5
1943	34.89	31	31	4	8.25	
1944	987.68	887	894	94	8.54	11
1946	217.50	195	197	20	8.47	2
1947	1,052.73	939	947	106	8.80	12
1948	11,226.24	9,953	10,037	1,189	9.15	130
1949	18,077.29	15,930	16,064	2,013	9.50	212
1950	8,719.66	7,636	7,700	1,020	9.87	103
1951	15,599.36	13,678	13,793	1,806	9.62	188
1953	28,402.54	24,554	24,761	3,642	10.42	350
1955	34,366.82	29,480	29,728	4,639	10.69	434
1956	30,399.14	25,867	26,085	4,314	11.13	388
1957	31,367.67	26,468	26,691	4,677	11.57	404
1958	28,725.04	24,026	24,228	4,497	12.03	374
1959	43,219.59	36,084	36,388	6,832	11.96	571
1960	43,289.42	35,800	36,101	7,188	12.45	577
1961	50,005.48	40,954	41,299	8,706	12.93	673
1962	50,135.12	40,935	41,280	8,855	12.92	685
1963	46,774.87	37,794	38,112	8,663	13.43	645
1964	17,642.05	14,100	14,219	3,423	13.94	246
1965	39,927.96	31,771	32,038	7,890	13.99	564
1966	43,793.88	34,440	34,730	9,064	14.53	624
1967	41,210.10	32,020	32,290	8,920	15.07	592
1968	26,337.59	20,346	20,517	5,821	15.17	384
1969	20,303.60	15,484	15,614	4,690	15.72	298

SUEZ WATER PENNSYLVANIA, INC.

ACCOUNT 333 SERVICES

CALCULATED REMAINING LIFE DEPRECIATION ACCRUAL
RELATED TO ORIGINAL COST AS OF DECEMBER 31, 2019

YEAR (1)	ORIGINAL COST (2)	CALCULATED ACCRUED (3)	ALLOC. BOOK RESERVE (4)	FUTURE BOOK ACCRUALS (5)	REM. LIFE (6)	ANNUAL ACCRUAL (7)
SURVIVOR CURVE.. IOWA 60-S2.5						
NET SALVAGE PERCENT.. 0						
1970	38,061.01	28,637	28,878	9,183	16.29	564
1971	71,490.58	53,396	53,845	17,646	16.44	1,073
1972	98,074.99	72,203	72,811	25,264	17.02	1,484
1973	140,805.38	102,140	103,000	37,805	17.60	2,148
1974	141,284.72	100,934	101,784	39,501	18.19	2,172
1975	113,974.19	80,648	81,327	32,647	18.39	1,775
1976	111,587.38	77,665	78,319	33,268	19.00	1,751
1977	148,896.55	101,875	102,732	46,165	19.61	2,354
1978	222,422.72	149,535	150,794	71,629	20.23	3,541
1979	223,088.31	148,175	149,422	73,666	20.48	3,597
1980	70,643.24	46,045	46,433	24,210	21.10	1,147
1981	157,322.77	100,545	101,391	55,932	21.74	2,573
1982	152,849.92	95,715	96,521	56,329	22.38	2,517
1983	179,897.16	110,313	111,241	68,656	23.02	2,982
1984	197,703.06	118,622	119,620	78,083	23.67	3,299
1985	358,602.52	210,320	212,090	146,513	24.32	6,024
1986	348,333.47	199,525	201,204	147,129	24.98	5,890
1987	588,610.10	329,033	331,802	256,808	25.64	10,016
1988	598,926.68	326,415	329,162	269,765	26.30	10,257
1989	465,035.10	246,794	248,871	216,164	26.97	8,015
1990	524,696.96	270,849	273,129	251,568	27.65	9,098
1991	546,397.21	274,073	276,380	270,017	28.32	9,534
1992	487,437.17	237,284	239,281	248,156	28.99	8,560
1993	623,132.89	292,249	294,709	328,424	30.00	10,947
1994	726,263.21	329,651	332,426	393,837	30.68	12,837
1995	673,935.18	295,588	298,076	375,859	31.36	11,985
1996	570,165.10	239,811	241,829	328,336	32.37	10,143
1997	535,700.15	216,959	218,785	316,915	33.06	9,586
1998	873,513.66	338,050	340,895	532,619	34.06	15,638
1999	931,754.37	345,681	348,590	583,164	34.75	16,782
2000	1,426,688.27	503,621	507,860	918,828	35.75	25,701
2001	1,204,939.25	405,703	409,118	795,821	36.45	21,833
2002	869,627.57	276,976	279,307	590,321	37.45	15,763
2003	830,541.07	249,411	251,510	579,031	38.45	15,059
2004	798,153.36	226,356	228,261	569,892	39.15	14,557
2005	633,561.59	168,147	169,562	464,000	40.14	11,560
2006	1,005,143.62	248,270	250,360	754,784	41.15	18,342
2007	1,387,582.01	317,479	320,151	1,067,431	42.14	25,331
2008	1,882,915.28	396,165	399,499	1,483,416	43.15	34,378
2009	1,302,400.11	251,624	253,742	1,048,658	43.85	23,915
2010	1,540,978.61	269,363	271,630	1,269,349	44.85	28,302
2011	1,622,306.91	253,729	255,865	1,366,442	45.85	29,802
2012	1,142,670.45	157,689	159,016	983,654	46.85	20,996

SUEZ WATER PENNSYLVANIA, INC.

ACCOUNT 333 SERVICES

CALCULATED REMAINING LIFE DEPRECIATION ACCRUAL
RELATED TO ORIGINAL COST AS OF DECEMBER 31, 2019

YEAR (1)	ORIGINAL COST (2)	CALCULATED ACCRUED (3)	ALLOC. BOOK RESERVE (4)	FUTURE BOOK ACCRUALS (5)	REM. LIFE (6)	ANNUAL ACCRUAL (7)
SURVIVOR CURVE.. IOWA 60-S2.5						
NET SALVAGE PERCENT.. 0						
2013	1,216,625.79	145,508	146,733	1,069,893	47.85	22,359
2014	2,300,454.76	232,806	234,765	2,065,690	48.85	42,286
2015	1,702,692.44	140,983	142,170	1,560,522	49.85	31,304
2016	2,875,710.91	185,196	186,755	2,688,956	50.85	52,880
2017	3,850,566.31	177,126	178,617	3,671,949	51.85	70,819
2018	1,115,667.03	30,792	31,051	1,084,616	52.85	20,523
2019	750,934.88	6,909	6,967	743,968	53.85	13,816
	41,020,732.30	10,709,528	10,799,668	30,221,064		736,362
COMPOSITE REMAINING LIFE AND ANNUAL ACCRUAL RATE, PERCENT ..						41.0 1.80

SUEZ WATER PENNSYLVANIA, INC.

ACCOUNT 334 METERS

CALCULATED REMAINING LIFE DEPRECIATION ACCRUAL
RELATED TO ORIGINAL COST AS OF DECEMBER 31, 2019

YEAR (1)	ORIGINAL COST (2)	CALCULATED ACCRUED (3)	ALLOC. BOOK RESERVE (4)	FUTURE BOOK ACCRUALS (5)	REM. LIFE (6)	ANNUAL ACCRUAL (7)
SURVIVOR CURVE.. IOWA 25-S1.5						
NET SALVAGE PERCENT.. 0						
1997	29,520.01	22,317	22,435	7,085	7.26	976
1998	289,602.09	213,553	214,685	74,917	7.66	9,780
1999	316,817.63	227,982	229,190	87,628	7.99	10,967
2000	562,192.40	393,535	395,621	166,571	8.36	19,925
2001	345,152.48	233,703	234,942	110,210	8.82	12,495
2002	419,627.46	274,646	276,102	143,525	9.24	15,533
2003	297,939.11	187,791	188,786	109,153	9.68	11,276
2004	422,713.86	256,165	257,523	165,191	10.08	16,388
2005	250,828.48	145,129	145,898	104,930	10.56	9,937
2006	557,663.96	306,381	308,005	249,659	11.07	22,553
2007	1,346,164.60	698,390	702,092	644,073	11.60	55,524
2008	559,983.87	272,376	273,820	286,164	12.14	23,572
2009	316,656.73	142,971	143,729	172,928	12.76	13,552
2010	816,294.02	339,660	341,460	474,834	13.33	35,621
2011	1,059,814.94	400,822	402,946	656,869	13.97	47,020
2012	1,500,990.85	508,836	511,533	989,458	14.62	67,678
2013	2,181,964.80	649,571	653,014	1,528,951	15.33	99,736
2014	2,105,852.45	537,414	540,262	1,565,590	16.05	97,545
2015	3,075,258.69	648,880	652,320	2,422,939	16.82	144,051
2016	1,103,125.76	182,678	183,646	919,480	17.64	52,125
2017	1,187,105.32	141,503	142,253	1,044,852	18.47	56,570
2018	1,515,503.90	109,116	109,694	1,405,810	19.33	72,727
2019	1,242,355.47	29,941	30,100	1,212,255	20.25	59,864
	21,503,128.88	6,923,360	6,960,056	14,543,073		955,415
COMPOSITE REMAINING LIFE AND ANNUAL ACCRUAL RATE, PERCENT ..						15.2 4.44

SUEZ WATER PENNSYLVANIA, INC.

ACCOUNT 335 HYDRANTS

CALCULATED REMAINING LIFE DEPRECIATION ACCRUAL
RELATED TO ORIGINAL COST AS OF DECEMBER 31, 2019

YEAR (1)	ORIGINAL COST (2)	CALCULATED ACCRUED (3)	ALLOC. BOOK RESERVE (4)	FUTURE BOOK ACCRUALS (5)	REM. LIFE (6)	ANNUAL ACCRUAL (7)
SURVIVOR CURVE.. IOWA 60-R4						
NET SALVAGE PERCENT.. 0						
1957	4,048.57	3,619	3,823	226	7.43	30
1958	10,122.47	9,027	9,536	586	7.46	79
1959	9,908.68	8,752	9,246	663	7.99	83
1960	12,770.29	11,169	11,799	971	8.53	114
1961	15,053.61	13,033	13,768	1,286	9.07	142
1962	10,380.14	8,894	9,396	984	9.61	102
1963	5,596.67	4,775	5,044	553	9.72	57
1964	28,121.01	23,723	25,061	3,060	10.29	297
1965	8,011.19	6,680	7,057	954	10.86	88
1966	17,451.95	14,379	15,190	2,262	11.44	198
1967	19,645.58	15,988	16,890	2,756	12.01	229
1968	14,889.30	11,962	12,637	2,252	12.60	179
1969	33,715.45	26,730	28,238	5,477	13.20	415
1970	29,011.67	22,548	23,820	5,192	14.19	366
1971	20,342.62	15,589	16,468	3,875	14.79	262
1972	23,605.59	17,827	18,833	4,773	15.40	310
1973	77,306.26	57,516	60,760	16,546	16.00	1,034
1974	51,896.96	38,020	40,165	11,732	16.61	706
1975	45,758.10	32,987	34,848	10,910	17.23	633
1976	69,460.65	49,248	52,026	17,435	17.85	977
1977	52,008.37	36,250	38,295	13,713	18.48	742
1978	83,249.85	56,660	59,856	23,394	19.48	1,201
1979	62,041.91	41,456	43,794	18,248	20.11	907
1980	50,748.57	33,276	35,153	15,596	20.74	752
1981	59,630.62	38,342	40,505	19,126	21.38	895
1982	43,620.49	27,315	28,856	14,764	22.38	660
1983	43,484.50	26,665	28,169	15,316	23.02	665
1984	62,690.24	37,614	39,736	22,954	23.67	970
1985	73,498.77	42,850	45,267	28,232	24.67	1,144
1986	120,210.31	68,460	72,322	47,888	25.32	1,891
1987	159,511.46	88,130	93,101	66,410	26.32	2,523
1988	142,314.06	76,650	80,973	61,341	26.98	2,274
1989	141,342.59	73,724	77,882	63,461	27.98	2,268
1990	153,850.91	78,064	82,467	71,384	28.64	2,492
1991	110,520.50	54,177	57,233	53,288	29.64	1,798
1992	80,367.90	38,239	40,396	39,972	30.30	1,319
1993	110,161.46	50,498	53,346	56,815	31.31	1,815
1994	124,226.08	54,809	57,901	66,325	32.30	2,053
1995	125,222.10	53,382	56,393	68,829	32.97	2,088
1996	117,945.98	48,228	50,948	66,998	33.97	1,972
1997	147,774.96	57,854	61,117	86,658	34.97	2,478
1998	154,185.16	58,004	61,276	92,909	35.65	2,606
1999	255,329.25	91,612	96,779	158,550	36.64	4,327

SUEZ WATER PENNSYLVANIA, INC.

ACCOUNT 335 HYDRANTS

CALCULATED REMAINING LIFE DEPRECIATION ACCRUAL
RELATED TO ORIGINAL COST AS OF DECEMBER 31, 2019

YEAR (1)	ORIGINAL COST (2)	CALCULATED ACCRUED (3)	ALLOC. BOOK RESERVE (4)	FUTURE BOOK ACCRUALS (5)	REM. LIFE (6)	ANNUAL ACCRUAL (7)
SURVIVOR CURVE.. IOWA 60-R4						
NET SALVAGE PERCENT.. 0						
2000	212,082.44	72,363	76,445	135,637	37.65	3,603
2001	217,883.06	70,551	74,531	143,352	38.64	3,710
2002	171,479.83	52,816	55,795	115,685	39.32	2,942
2003	200,638.93	58,266	61,553	139,086	40.32	3,450
2004	348,703.20	95,126	100,492	248,211	41.32	6,007
2005	184,053.73	46,971	49,620	134,434	42.32	3,177
2006	263,141.77	62,522	66,049	197,093	43.32	4,550
2007	131,967.07	29,033	30,671	101,296	44.32	2,286
2008	271,825.58	55,017	58,120	213,706	45.32	4,715
2009	289,029.76	53,413	56,426	232,604	46.32	5,022
2010	74,127.36	12,468	13,171	60,956	46.99	1,297
2011	252,593.98	37,990	40,133	212,461	48.00	4,426
2012	155,843.99	20,696	21,863	133,981	48.99	2,735
2013	173,306.65	19,930	21,054	152,253	50.00	3,045
2014	369,295.02	35,969	37,998	331,297	50.99	6,497
2015	180,984.45	14,406	15,219	165,765	52.00	3,188
2016	890,653.13	55,220	58,334	832,319	52.99	15,707
2017	317,807.40	14,047	14,839	302,968	54.00	5,611
2018	322,852.26	8,588	9,073	313,779	54.99	5,706
2019	99,388.42	875	924	98,464	56.00	1,758
	8,108,690.83	2,440,992	2,578,680	5,530,011		135,573
COMPOSITE REMAINING LIFE AND ANNUAL ACCRUAL RATE, PERCENT ..						40.8 1.67

SUEZ WATER PENNSYLVANIA, INC.

ACCOUNT 339 OTHER PLANT AND MISCELLANEOUS EQUIPMENT

CALCULATED REMAINING LIFE DEPRECIATION ACCRUAL
RELATED TO ORIGINAL COST AS OF DECEMBER 31, 2019

YEAR (1)	ORIGINAL COST (2)	CALCULATED ACCRUED (3)	ALLOC. BOOK RESERVE (4)	FUTURE BOOK ACCRUALS (5)	REM. LIFE (6)	ANNUAL ACCRUAL (7)
SURVIVOR CURVE.. IOWA 40-S2						
NET SALVAGE PERCENT.. 0						
1998	495,159.29	274,665	366,917	128,242	17.26	7,430
2002	8,243.48	3,866	5,165	3,078	19.81	155
2006	5,665.96	2,111	2,820	2,846	22.73	125
2007	10,176.78	3,523	4,706	5,471	23.60	232
2008	5,242.31	1,682	2,247	2,995	24.34	123
2009	13,242.00	3,893	5,200	8,042	25.21	319
2012	42.00	9	12	30	27.96	1
2014	949.29	148	198	751	29.84	25
2015	534.38	68	91	443	30.71	14
	539,255.49	289,965	387,356	151,899		8,424
COMPOSITE REMAINING LIFE AND ANNUAL ACCRUAL RATE, PERCENT ..						18.0 1.56

SUEZ WATER PENNSYLVANIA, INC.

ACCOUNT 340.1 OFFICE FURNITURE AND EQUIPMENT - COMPUTERS AND SOFTWARE

CALCULATED REMAINING LIFE DEPRECIATION ACCRUAL
RELATED TO ORIGINAL COST AS OF DECEMBER 31, 2019

YEAR (1)	ORIGINAL COST (2)	CALCULATED ACCRUED (3)	ALLOC. BOOK RESERVE (4)	FUTURE BOOK ACCRUALS (5)	REM. LIFE (6)	ANNUAL ACCRUAL (7)
SURVIVOR CURVE.. 5-SQUARE						
NET SALVAGE PERCENT.. 0						
2007	95,995.46	95,995	95,995			
2008	23,621.82	23,622	23,622			
2009	358,158.29	358,158	358,158			
2010	363,305.77	363,306	363,306			
2011	142,917.12	142,917	142,917			
2012	398,051.12	398,051	398,051			
2013	640,720.93	640,721	640,721			
2014	218,590.38	218,590	218,590			
2015	290,868.45	261,782	237,665	53,203	0.50	53,203
2016	108,253.60	75,778	68,797	39,457	1.50	26,305
2017	5,697.74	2,849	2,587	3,111	2.50	1,244
	2,646,180.68	2,581,769	2,550,409	95,772		80,752

COMPOSITE REMAINING LIFE AND ANNUAL ACCRUAL RATE, PERCENT .. 1.2 3.05

SUEZ WATER PENNSYLVANIA, INC.

ACCOUNT 340.11 SOFTWARE - LARGE

CALCULATED REMAINING LIFE DEPRECIATION ACCRUAL
RELATED TO ORIGINAL COST AS OF DECEMBER 31, 2019

YEAR (1)	ORIGINAL COST (2)	CALCULATED ACCRUED (3)	ALLOC. BOOK RESERVE (4)	FUTURE BOOK ACCRUALS (5)	REM. LIFE (6)	ANNUAL ACCRUAL (7)
SURVIVOR CURVE.. 8-SQUARE						
NET SALVAGE PERCENT.. 0						
2011	3,577,604.00	3,577,604	3,577,604			
2012	87,975.00	82,477	82,322	5,653	0.50	5,653
	3,665,579.00	3,660,081	3,659,926	5,653		5,653
COMPOSITE REMAINING LIFE AND ANNUAL ACCRUAL RATE, PERCENT ..					1.0	0.15

SUEZ WATER PENNSYLVANIA, INC.

ACCOUNT 340.2 OFFICE FURNITURE AND EQUIPMENT - FURNITURE

CALCULATED REMAINING LIFE DEPRECIATION ACCRUAL
RELATED TO ORIGINAL COST AS OF DECEMBER 31, 2019

YEAR (1)	ORIGINAL COST (2)	CALCULATED ACCRUED (3)	ALLOC. BOOK RESERVE (4)	FUTURE BOOK ACCRUALS (5)	REM. LIFE (6)	ANNUAL ACCRUAL (7)
SURVIVOR CURVE.. 15-SQUARE						
NET SALVAGE PERCENT.. 0						
2012	69,239.46	34,620	52,780	16,459	7.50	2,195
2013	91,981.10	39,858	60,766	31,215	8.50	3,672
2014	25,432.74	9,325	14,216	11,217	9.50	1,181
2015	78,307.87	23,492	35,815	42,493	10.50	4,047
2016	394,170.94	91,972	140,216	253,955	11.50	22,083
2017	313.99	52	79	235	12.50	19
	659,446.10	199,319	303,872	355,574		33,197

COMPOSITE REMAINING LIFE AND ANNUAL ACCRUAL RATE, PERCENT .. 10.7 5.03

SUEZ WATER PENNSYLVANIA, INC.

ACCOUNT 341 TRANSPORTATION EQUIPMENT - TRUCKS

CALCULATED REMAINING LIFE DEPRECIATION ACCRUAL
RELATED TO ORIGINAL COST AS OF DECEMBER 31, 2019

YEAR (1)	ORIGINAL COST (2)	CALCULATED ACCRUED (3)	ALLOC. BOOK RESERVE (4)	FUTURE BOOK ACCRUALS (5)	REM. LIFE (6)	ANNUAL ACCRUAL (7)
SURVIVOR CURVE.. IOWA 7-L3						
NET SALVAGE PERCENT.. 0						
2015	1,057.45	683	529	528	2.46	215
	1,057.45	683	529	528		215
COMPOSITE REMAINING LIFE AND ANNUAL ACCRUAL RATE, PERCENT ..						2.5 20.33

SUEZ WATER PENNSYLVANIA, INC.

ACCOUNT 343.1 SHOP AND GARAGE EQUIPMENT

CALCULATED REMAINING LIFE DEPRECIATION ACCRUAL
RELATED TO ORIGINAL COST AS OF DECEMBER 31, 2019

YEAR (1)	ORIGINAL COST (2)	CALCULATED ACCRUED (3)	ALLOC. BOOK RESERVE (4)	FUTURE BOOK ACCRUALS (5)	REM. LIFE (6)	ANNUAL ACCRUAL (7)
SURVIVOR CURVE.. 20-SQUARE						
NET SALVAGE PERCENT.. 0						
2009	15,026.77	7,889	10,574	4,453	9.50	469
2010	202,534.12	96,204	128,951	73,583	10.50	7,008
2011	117,960.29	50,133	67,198	50,762	11.50	4,414
2012	91,515.86	34,318	45,999	45,517	12.50	3,641
2013	56,571.73	18,386	24,644	31,928	13.50	2,365
2014	44,556.49	12,253	16,424	28,132	14.50	1,940
2015	235,467.55	52,980	71,014	164,454	15.50	10,610
2017	6,796.31	850	1,139	5,657	17.50	323
2018	370,163.82	27,762	37,212	332,952	18.50	17,997
	1,140,592.94	300,775	403,155	737,438		48,767
COMPOSITE REMAINING LIFE AND ANNUAL ACCRUAL RATE, PERCENT ..						15.1 4.28

SUEZ WATER PENNSYLVANIA, INC.

ACCOUNT 343.2 TOOLS AND WORK EQUIPMENT

CALCULATED REMAINING LIFE DEPRECIATION ACCRUAL
RELATED TO ORIGINAL COST AS OF DECEMBER 31, 2019

YEAR (1)	ORIGINAL COST (2)	CALCULATED ACCRUED (3)	ALLOC. BOOK RESERVE (4)	FUTURE BOOK ACCRUALS (5)	REM. LIFE (6)	ANNUAL ACCRUAL (7)
SURVIVOR CURVE.. 20-SQUARE						
NET SALVAGE PERCENT.. 0						
1996	91,022.00	91,022	91,022			
1997	15,718.06	15,718	15,718			
1998	18,091.90	18,092	18,092			
1999	19,809.02	19,809	19,809			
2000	53,752.16	52,408	49,318	4,434	0.50	4,434
2001	68,425.83	63,294	59,562	8,864	1.50	5,909
2002	6,229.70	5,451	5,130	1,100	2.50	440
2003	32,202.15	26,567	25,001	7,201	3.50	2,057
2004	25,375.57	19,666	18,507	6,869	4.50	1,526
2005	22,252.82	16,133	15,182	7,071	5.50	1,286
2006	81,045.92	54,706	51,481	29,565	6.50	4,548
2007	37,352.90	23,346	21,969	15,384	7.50	2,051
2008	20,599.96	11,845	11,147	9,453	8.50	1,112
2009	87,917.51	46,157	43,436	44,482	9.50	4,682
2010	81,808.70	38,859	36,568	45,241	10.50	4,309
2011	16,643.56	7,074	6,657	9,987	11.50	868
2012	6,874.79	2,578	2,426	4,449	12.50	356
2013	41,688.59	13,549	12,750	28,939	13.50	2,144
2014	414,116.79	113,882	107,167	306,950	14.50	21,169
2015	568,666.54	127,950	120,406	448,261	15.50	28,920
2016	84,012.51	14,702	13,835	70,178	16.50	4,253
2017	151,381.77	18,923	17,807	133,575	17.50	7,633
2018	108,011.33	8,101	7,623	100,388	18.50	5,426
2019	132,517.92	3,313	3,118	129,400	19.50	6,636
	2,185,518.00	813,145	773,731	1,411,787		109,759

COMPOSITE REMAINING LIFE AND ANNUAL ACCRUAL RATE, PERCENT .. 12.9 5.02

SUEZ WATER PENNSYLVANIA, INC.

ACCOUNT 344 LABORATORY EQUIPMENT

CALCULATED REMAINING LIFE DEPRECIATION ACCRUAL
RELATED TO ORIGINAL COST AS OF DECEMBER 31, 2019

YEAR (1)	ORIGINAL COST (2)	CALCULATED ACCRUED (3)	ALLOC. BOOK RESERVE (4)	FUTURE BOOK ACCRUALS (5)	REM. LIFE (6)	ANNUAL ACCRUAL (7)
SURVIVOR CURVE.. 15-SQUARE						
NET SALVAGE PERCENT.. 0						
1996	8,583.00	8,583	8,583			
1998	1,877.41	1,877	1,877			
2000	4,245.39	4,245	4,245			
2006	37,970.96	34,174	37,717	254	1.50	169
2007	342.41	285	315	27	2.50	11
2008	4,473.90	3,430	3,786	688	3.50	197
2009	4,348.00	3,044	3,359	989	4.50	220
2010	15,016.00	9,510	10,496	4,520	5.50	822
2011	17,500.35	9,917	10,945	6,555	6.50	1,008
2012	3,118.00	1,559	1,721	1,397	7.50	186
2013	808.00	350	386	422	8.50	50
2014	3,062.10	1,123	1,239	1,823	9.50	192
2015	25,067.71	7,520	8,300	16,768	10.50	1,597
2017	954.48	159	175	779	12.50	62
	127,367.71	85,776	93,144	34,224		4,514

COMPOSITE REMAINING LIFE AND ANNUAL ACCRUAL RATE, PERCENT .. 7.6 3.54

SUEZ WATER PENNSYLVANIA, INC.

ACCOUNT 346 COMMUNICATION EQUIPMENT

CALCULATED REMAINING LIFE DEPRECIATION ACCRUAL
RELATED TO ORIGINAL COST AS OF DECEMBER 31, 2019

YEAR (1)	ORIGINAL COST (2)	CALCULATED ACCRUED (3)	ALLOC. BOOK RESERVE (4)	FUTURE BOOK ACCRUALS (5)	REM. LIFE (6)	ANNUAL ACCRUAL (7)
SURVIVOR CURVE.. 10-SQUARE						
NET SALVAGE PERCENT.. 0						
2002	207,677.81	207,678	207,678			
2003	4,590.34	4,590	4,590			
2004	4,695.24	4,695	4,695			
2005	1,098,324.62	1,098,325	1,098,325			
2006	31,869.67	31,870	31,870			
2007	46,725.91	46,726	46,726			
2008	73,322.61	73,323	73,323			
2009	270,709.32	270,709	270,709			
2010	224,025.86	212,825	202,309	21,717	0.50	21,717
2011	26,630.92	22,636	21,518	5,113	1.50	3,409
2012	365,125.89	273,844	260,313	104,813	2.50	41,925
2013	203,363.64	132,186	125,655	77,709	3.50	22,203
2014	463,764.62	255,071	242,468	221,297	4.50	49,177
2015	311,617.76	140,228	133,299	178,319	5.50	32,422
2016	3,218,317.13	1,126,411	1,070,756	2,147,561	6.50	330,394
2017	81,275.96	20,319	19,315	61,961	7.50	8,261
2018	198,020.77	29,703	28,235	169,786	8.50	19,975
2019	242,949.52	12,147	11,547	231,403	9.50	24,358
	7,073,007.59	3,963,286	3,853,331	3,219,677		553,841

COMPOSITE REMAINING LIFE AND ANNUAL ACCRUAL RATE, PERCENT .. 5.8 7.83

SUEZ WATER PENNSYLVANIA, INC.

ACCOUNT 347 MISCELLANEOUS EQUIPMENT

CALCULATED REMAINING LIFE DEPRECIATION ACCRUAL
RELATED TO ORIGINAL COST AS OF DECEMBER 31, 2019

YEAR (1)	ORIGINAL COST (2)	CALCULATED ACCRUED (3)	ALLOC. BOOK RESERVE (4)	FUTURE BOOK ACCRUALS (5)	REM. LIFE (6)	ANNUAL ACCRUAL (7)
SURVIVOR CURVE.. 15-SQUARE						
NET SALVAGE PERCENT.. 0						
2004	2,697.00	2,697	2,697			
2005	2,825.83	2,732	2,442	384	0.50	384
2010	12,555.23	7,952	7,108	5,447	5.50	990
2011	2,106.83	1,194	1,067	1,040	6.50	160
2013	3,300.51	1,430	1,278	2,023	8.50	238
2015	21,945.51	6,584	5,885	16,061	10.50	1,530
2016	77,842.71	18,163	16,236	61,607	11.50	5,357
2017	24,580.48	4,097	3,662	20,918	12.50	1,673
	147,854.10	44,849	40,375	107,479		10,332
COMPOSITE REMAINING LIFE AND ANNUAL ACCRUAL RATE, PERCENT .. 10.4						6.99

**PART III. EXPERIENCED AND
ESTIMATED NET SALVAGE**

SUEZ WATER PENNSYLVANIA, INC.

EXPERIENCED RETIREMENTS BY ACCOUNT AND ASSOCIATED
COST OF REMOVAL, GROSS SALVAGE, AND NET SALVAGE

ACCT	REGULAR RETIREMENTS	COST OF REMOVAL	GROSS SALVAGE	NET SALVAGE
2015 TRANSACTION YEAR				
303.00	50,000.00	31,870.00		31,870.00-
304.20	34,639.57	990.70		990.70-
304.30	35,446.31	6,690.00		6,690.00-
304.51	4,082.76			
306.00	11,391.94			
307.00	19,975.32	2,450.00		2,450.00-
311.20	311,207.13	15,818.19		15,818.19-
320.10	34,839.68	277.81		277.81-
320.30	442,790.10	28,976.39		28,976.39-
330.00	203,288.06	188.67		188.67-
331.00	137,544.98	64,377.56		64,377.56-
333.00	23,853.16	11,224.85		11,224.85-
334.00	233,571.57	202,893.71	14,105.00	188,788.71-
335.00	6,512.74	2,330.16	4,271.68	1,941.52
340.10	2,330,409.50			
346.00	1,039,972.04	2,032.28		2,032.28-
	4,919,524.86	370,120.32	18,376.68	351,743.64-
2016 TRANSACTION YEAR				
304.20	122,296.85	392.43		392.43-
304.30	432,146.41	3,490.94		3,490.94-
304.51	63,471.63			
306.00	43,080.34			
307.00	3,455.44			
311.20	348,953.52	19,218.04		19,218.04-
320.10	111,726.52	21.90		21.90-
320.30	445,167.27	23,238.73		23,238.73-
330.00	196,334.42	13,273.33		13,273.33-
331.00	248,153.98	194,519.10		194,519.10-
333.00	64,297.16	33,370.79		33,370.79-
334.00	912,384.96	78,538.97-	5,350.75	83,889.72
335.00	12,086.80	3,610.97	2,452.58	1,158.39-
340.10	24,300.61	98.25		98.25-
340.20		47.19		47.19-
346.00	213,640.68	786.09		786.09-
	3,241,496.59	213,528.79	7,803.33	205,725.46-

SUEZ WATER PENNSYLVANIA, INC.

EXPERIENCED RETIREMENTS BY ACCOUNT AND ASSOCIATED
COST OF REMOVAL, GROSS SALVAGE, AND NET SALVAGE

ACCT	REGULAR RETIREMENTS	COST OF REMOVAL	GROSS SALVAGE	NET SALVAGE
2017 TRANSACTION YEAR				
304.20	21,421.47	82.06		82.06-
304.30	7,552.57	8,379.82		8,379.82-
304.51	2,000.00			
304.52	75,000.00			
304.53	800.00			
306.00	2,080.00			
307.00	6,000.00			
311.20	166,204.09	3,724.95		3,724.95-
320.10	73,911.78	501.26		501.26-
320.30	58,663.19	23,442.19		23,442.19-
330.00	54,640.00	11,261.80		11,261.80-
331.00	1,018,780.44	237,069.34		237,069.34-
333.00	132,871.27	42,620.10		42,620.10-
334.00	326,155.31	6,257.51-	13,554.00	19,811.51
335.00	24,266.42	2,742.08	902.80	1,839.28-
340.10	65,629.33			
346.00	118,958.84	1,796.26		1,796.26-
	2,154,934.71	325,362.35	14,456.80	310,905.55-
2018 TRANSACTION YEAR				
304.51	20,800.00	6,400.00		6,400.00-
304.52	36,400.00	11,200.00		11,200.00-
304.53	7,800.00	2,400.00		2,400.00-
311.20	90,000.00	43,500.00		43,500.00-
320.10	25,000.00	5,000.00		5,000.00-
320.30	50,000.00	15,000.00		15,000.00-
330.00	100,000.00	55,000.00		55,000.00-
331.00	280,000.00	103,750.00		103,750.00-
333.00	22,000.00	1,800.00		1,800.00-
334.00	70,000.00	18,000.00		18,000.00-
335.00	5,000.00	400.00		400.00-
340.10	162,368.14			
346.00	106,088.56	3,000.00		3,000.00-
	975,456.70	265,450.00		265,450.00-

SUEZ WATER PENNSYLVANIA, INC.

EXPERIENCED RETIREMENTS BY ACCOUNT AND ASSOCIATED
COST OF REMOVAL, GROSS SALVAGE, AND NET SALVAGE

ACCT	REGULAR RETIREMENTS	COST OF REMOVAL	GROSS SALVAGE	NET SALVAGE
2019 TRANSACTION YEAR				
304.51	20,800.00	6,400.00		6,400.00-
304.52	36,400.00	11,200.00		11,200.00-
304.53	7,800.00	2,400.00		2,400.00-
306.00	90,000.00	40,000.00		40,000.00-
311.20	195,000.00	53,500.00		53,500.00-
320.10	85,000.00	30,000.00		30,000.00-
320.30	125,000.00	40,000.00		40,000.00-
330.00	75,000.00	45,000.00		45,000.00-
331.00	680,000.00	228,750.00		228,750.00-
333.00	22,000.00	1,800.00		1,800.00-
334.00	20,000.00	3,000.00		3,000.00-
335.00	5,000.00	400.00		400.00-
340.10	652,595.43			
340.20	11,201.43			
346.00	95,901.80	3,000.00		3,000.00-
	2,121,698.66	465,450.00		465,450.00-
TOTAL	13,413,111.52	1,639,911.46	40,636.81	1,599,274.65-

SWPA STATEMENT NO. 7-R

BEFORE THE
PENNSYLVANIA PUBLIC UTILITY COMMISSION

REBUTTAL TESTIMONY OF
JOHN J. SPANOS

ON BEHALF OF SUEZ WATER PENNSYLVANIA INC.

CONCERNING
DEPRECIATION EXPENSE

August 17, 2018

BEFORE THE PENNSYLVANIA PUBLIC UTILITY COMMISSION

RE: SUEZ WATER PENNSYLVANIA INC.
DOCKET R-2018-3000834
REBUTTAL TESTIMONY OF JOHN J. SPANOS

1 **Q. Please state your name and address.**

2 A. John J. Spanos. My business address is 207 Senate Avenue, Camp Hill,
3 Pennsylvania.

4 **Q. Are you the same John J. Spanos who submitted Direct Testimony in**
5 **this proceeding?**

6 A. Yes.

7 **Q. What is the purpose of your rebuttal testimony?**

8 A. The purpose of this testimony is to address and rebut the depreciation expense
9 adjustments set forth by Office of Consumer Advocate (“OCA”) witness Lafayette
10 K. Morgan, Jr. and the Bureau of Investigation and Enforcement (“I&E”) witness
11 Ethan H. Cline. My testimony will focus on the depreciation expense proposals of
12 each witness and will not address the use of average balances for determining rate
13 base.

14 **Q. What have witnesses Cline and Morgan recommended for**
15 **depreciation expense?**
16

17 A. Both witnesses have proposed the use of average balances to determine rate base
18 for the Fully Projected Future Test Year (“FPFTY”). They have also proposed an
19 adjustment to reduce depreciation expense, which they argue is consistent with
20 their approach to the Fully Projected Future Test Year. Specifically, for the
21 depreciation expense included in the Company’s revenue requirement, both
22 witnesses propose to use the average of the depreciation expense calculated as of

1 December 31, 2018 and the depreciation expense calculated as of December 31,
2 2019.¹

3
4 **Q. Are Mr. Morgan and Mr. Cline's adjustments calculated correctly?**

5 A. No. Both witnesses have taken the average of annualized depreciation expense
6 amounts at different periods. This is not how depreciation is recorded on the
7 Company's books, nor is it how depreciation expense should be calculated for the
8 FPFTY. For book purposes, the appropriate depreciation rates are applied to the
9 Company's balances throughout the year (typically monthly), with the total
10 amounts recorded for the year being the annual depreciation expense amount.
11 This could also be approximated by applying the appropriate depreciation rates to
12 the average of the beginning of the year and end of the year plant in service
13 balances for the FPFTY. However, this would differ from the actual depreciation
14 expense for the year based on the timing of additions and retirements.

15 For the purpose of establishing test year depreciation expense, the
16 traditional practice has been to develop the plant and accumulated depreciation
17 balances for each time period. This is not a simple averaging process. First, the
18 book reserve is brought forward based on many calculations to annualize the
19 depreciation accruals, retirements, amortization of net salvage, cost of removal,
20 gross salvage, acquisitions and adjustments. The annualized depreciation
21 accruals are determined by calculating the average plant balance for the test year
22 by the depreciation rates for each individual account. The amortization of net
23 salvage is determined based on the incurred cost of removal and gross salvage for

¹ See Schedule LKM-21 of Mr. Morgan's Direct Testimony, in which he calculates the "Average FPFTY Depreciation Expense" as the average of the future test year and fully projected future test year depreciation expense. Similarly, Mr. Cline explains on page 24 of his Direct Testimony that his annual depreciation expense recommendation uses "the average of the annual depreciation expense in the FTY and [his] adjusted annual depreciation expense in the FPFTY, less the \$390,910 depreciation on contribution in aid of construction ("CIAC")/Advances." His adjusted FPFTY depreciation expense also excludes depreciation expense for the Mahoning Township Water System.

1 the five years prior. The projected retirements, cost of removal and gross salvage
2 are determined on a yearly basis in order to properly establish an end of test year
3 book reserve. This is critical in order to properly annualize the book reserve in a
4 consistent manner to the plant balance. This removes the over or under recovery
5 concerns for new vintages within the year. Once the future test year is
6 determined, the same process must occur for the FPFTY. Consequently, each
7 account's depreciation rate and expense needs to be calculated on the vintage
8 plant balance and book reserve as of the same date.

9 **Q. Do you agree with Mr. Morgan or Mr. Cline's depreciation proposals?**

10 A. No. For the reasons discussed above, their depreciation expense amounts are not
11 calculated properly. Instead, my recommended depreciation expense amounts
12 should be adopted.

13 **Q. Have there been changes to the future test year and fully projected
14 future test year since initially filed?**

15 A. Yes. Initially, both future test years included the acquisition of the Mahoning
16 Township water system. The attached schedules, Rebuttal Exhibit JJS-1 and
17 Rebuttal Exhibit JJS-2, set forth the revised depreciation expense and rates for
18 each period. The impact on the FPFTY is a reduction of approximately \$107,500
19 in depreciation expense.

20 **Q. Have you presented the change in forecasted plant in service from
21 December 31, 2017 through December 31, 2019?**

22 A. Yes. The attached schedule, Rebuttal Exhibit JJS-3, sets forth the additions,
23 retirements and adjustments by account for 2018 and 2019.

24 **Q. Does this complete your Prepared Rebuttal Testimony?**

25 A. Yes, it does. However, I reserve the right to supplement my testimony as
26 additional issues arise in this proceeding.

SUEZ WATER PENNSYLVANIA, INC.

TABLE 1. SUMMARY OF ESTIMATED SURVIVOR CURVES, ORIGINAL COST, BOOK RESERVE AND CALCULATED ANNUAL DEPRECIATION ACCRUALS RELATED TO UTILITY PLANT AS OF DECEMBER 31, 2018

DEPRECIABLE GROUP (1)	SURVIVOR CURVE (2)	ORIGINAL COST (3)	BOOK RESERVE (4)	FUTURE ACCRUALS (5)	ANNUAL		COMPOSITE REMAINING LIFE (8)	
					ACCRUAL AMOUNT (6)	ACCRUAL RATE (7)=(6)/(3)		
INTANGIBLE PLANT								
301.00	ORGANIZATION	66,399.00	145,805					
302.00	FRANCHISES AND CONSENTS	64,265.56						
303.00	MISCELLANEOUS INTANGIBLE PLANT	4,423,421.87	(130,715)					
	TOTAL INTANGIBLE PLANT	4,554,086.43	15,090					
DEPRECIABLE PLANT								
304.20	STRUCTURES AND IMPROVEMENTS PUMPING	55-R2	3,721,078.15	953,370	2,767,708	84,585	2.27	32.7
304.30	WATER TREATMENT PLANT							
	BLOOMSBURG TREATMENT PLANT	55-S1.5	181,380.86	114,065	67,316	8,495	4.68	7.9
	BLOOMSBURG TREATMENT PLANT - NEW	55-S1.5	5,829,778.36	300,744	5,529,034	134,920	2.31	41.0
	SIXTH STREET PLANT	55-S1.5	4,160,026.78	1,596,463	2,563,564	114,870	2.76	22.3
	RICHARD C. RABOLD	55-S1.5	1,619,181.24	814,990	804,191	40,994	2.53	19.6
	MARKET STREET	55-S1.5	101,359.72	78,890	22,470	4,332	4.27	5.2
	OLD HUMMELSTOWN PLANT	55-S1.5	86,583.70	86,584	0	0	-	-
	HUMMELSTOWN MEMBRANE PLANT	55-S1.5	4,410,545.60	1,125,105	3,285,441	105,380	2.39	31.2
	OTHER TREATMENT FACILITIES	50-R3	3,087,574.48	489,191	2,598,383	70,840	2.29	36.7
	TOTAL WATER TREATMENT PLANT		19,476,430.74	4,606,032	14,870,399	479,831	2.46	31.0
304.40	TRANSMISSION AND DISTRIBUTION	40-R3	282,963.06	16,636	266,327	8,315	2.94	32.0
304.51	OFFICES							
	BLOOMSBURG TREATMENT PLANT	55-S1.5	9,036,735.87	472,461	8,564,275	208,843	2.31	41.0
	OTHER OFFICES	45-R2.5	900,933.81	226,151	674,783	23,673	2.63	28.5
	TOTAL OFFICES		9,937,669.68	698,612	9,239,058	232,516	2.34	39.7
304.52	STORES, SHOP AND GARAGE							
	SUMMIT VIEW MAINTENANCE BUILDING	60-S0.5	1,377,181.17	504,855	872,326	41,474	3.01	21.0
	OTHER MAINTENANCE BUILDINGS	35-S2.5	186,828.31	106,679	80,149	6,703	3.59	12.0
	TOTAL ACCOUNT STORES, SHOP AND GARAGE		1,564,009.48	611,534	952,475	48,177	3.08	19.8
304.53	MISCELLANEOUS	25-S2	351,118.10	175,845	175,273	16,315	4.65	10.7
	TOTAL STRUCTURES AND IMPROVEMENTS		35,333,269.21	7,062,029	28,271,240	869,739	2.46	32.5
305.00	COLLECTING AND IMPOUNDING RESERVOIRS	65-S1	434,632.39	107,698	326,934	8,166	1.88	40.0
306.00	LAKE, RIVER AND OTHER INTAKES							
	ROCKVILLE INTAKE	65-R2.5	1,519,927.27	727,387	792,540	33,021	2.17	24.0
	HUMMELSTOWN INTAKE	65-R2.5	1,335,191.80	329,740	1,005,452	28,259	2.12	35.6
	OTHER INTAKES	50-S1	509,724.53	82,321	427,404	12,509	2.45	34.2
	TOTAL LAKE, RIVER AND OTHER INTAKES		3,364,843.60	1,139,448	2,225,396	73,789	2.19	30.2

SUEZ WATER PENNSYLVANIA, INC.

TABLE 1. SUMMARY OF ESTIMATED SURVIVOR CURVES, ORIGINAL COST, BOOK RESERVE AND CALCULATED ANNUAL DEPRECIATION ACCRUALS RELATED TO UTILITY PLANT AS OF DECEMBER 31, 2018

	DEPRECIABLE GROUP (1)	SURVIVOR CURVE (2)	ORIGINAL COST (3)	BOOK RESERVE (4)	FUTURE ACCRUALS (5)	ANNUAL		COMPOSITE REMAINING LIFE (8)
						ACCRUAL AMOUNT (6)	ACCRUAL RATE (7)=(6)/(3)	
307.00	WELLS AND SPRINGS	48-R2	1,028,041.81	523,039	505,003	18,050	1.76	28.0
308.00	INFILTRATION GALLERIES AND TUNNELS	40-R2.5	13,358.04	2,447	10,911	410	3.07	26.6
	PUMPING EQUIPMENT							
311.20	ELECTRIC PUMPING EQUIPMENT	36-R0.5	14,889,846.39	4,918,602	9,971,244	525,883	3.53	19.0
311.30	OIL ENGINE PUMPING EQUIPMENT	35-R2	314,155.59	250,830	63,326	3,978	1.27	15.9
	TOTAL PUMPING EQUIPMENT		15,204,001.98	5,169,432	10,034,570	529,861	3.49	18.9
	WATER TREATMENT PLANT							
320.10	STRUCTURES AND IMPROVEMENTS							
	BLOOMSBURG TREATMENT PLANT	50-R1.5	338,354.21	324,761	13,593	1,533	0.45	8.9
	BLOOMSBURG TREATMENT PLANT - NEW	50-R1.5	13,501,911.63	1,300,862	12,201,050	394,346	2.92	30.9
	SIXTH STREET PLANT	50-R1.5	10,577,146.38	5,953,150	4,623,996	217,078	2.05	21.3
	RICHARD C. RABOLD	50-R1.5	1,756,585.15	1,212,376	544,209	27,853	1.59	19.5
	MARKET STREET	50-R1.5	192,621.85	166,367	26,255	4,876	2.53	5.4
	OLD HUMMELSTOWN PLANT	50-R1.5	858,433.64	858,434	0	0	-	-
	HUMMELSTOWN MEMBRANE PLANT	50-R1.5	9,469,382.38	3,733,560	5,735,822	200,609	2.12	28.6
	OTHER TREATMENT FACILITIES	40-R1.5	892,814.19	489,350	403,464	16,532	1.85	24.4
	TOTAL STRUCTURES AND IMPROVEMENTS		37,587,249.43	14,038,860	23,548,389	862,827	2.30	27.3
320.20	PAINTING	10-SQ	447,524.82	223,414	224,111	39,265	8.77	5.7
320.30	CHEMICAL EQUIPMENT	25-S0.5	6,743,249.88	829,841	5,913,409	496,249	7.36	11.9
	TOTAL WATER TREATMENT PLANT		44,778,024.13	15,092,115	29,685,909	1,398,341	3.12	21.2
330.00	DISTRIBUTION RESERVOIRS AND STANDPIPES	45-R1.5	11,140,101.80	3,466,554	7,673,548	291,274	2.61	26.3
331.00	TRANSMISSION AND DISTRIBUTION MAINS	80-R3	159,413,414.84	15,906,006	143,507,409	2,532,749	1.59	56.7
333.00	SERVICES	60-S2.5	39,848,031.83	10,068,688	29,779,344	717,681	1.80	41.5
334.00	METERS	25-S1.5	20,103,309.37	5,996,278	14,107,031	910,547	4.53	15.5
335.00	HYDRANTS	60-R4	7,774,000.86	2,447,081	5,326,920	129,887	1.67	41.0
339.00	OTHER PLANT AND MISCELLANEOUS EQUIPMENT	40-S2	539,255.49	378,782	160,473	8,564	1.59	18.7
	OFFICE FURNITURE AND EQUIPMENT							
340.10	COMPUTERS AND SOFTWARE	5-SQ	3,298,776.11	2,998,183	300,593	206,489	6.26	1.5
340.11	SOFTWARE - LARGE	8-SQ	3,665,579.00	3,394,538	271,041	265,327	7.24	1.0
340.20	FURNITURE	15-SQ	659,446.10	270,825	388,621	33,071	5.01	11.8
	TOTAL OFFICE FURNITURE AND EQUIPMENT		7,623,801.21	6,663,546	960,255	504,887	6.62	1.9
341.00	TRANSPORTATION EQUIPMENT	7-L3	1,057.45	275	782	254	24.02	3.1
	TOOLS, SHOP AND GARAGE EQUIPMENT							
343.10	SHOP AND GARAGE EQUIPMENT	20-SQ	1,147,657.06	354,702	792,955	48,919	4.26	16.2
343.20	TOOLS AND WORK EQUIPMENT	20-SQ	2,066,262.77	676,281	1,389,982	106,085	5.13	13.1
	TOTAL TOOLS SHOP AND GARAGE EQUIPMENT		3,213,919.83	1,030,983	2,182,937	155,004	4.82	14.1

SUEZ WATER PENNSYLVANIA, INC.

TABLE 1. SUMMARY OF ESTIMATED SURVIVOR CURVES, ORIGINAL COST, BOOK RESERVE AND CALCULATED ANNUAL DEPRECIATION ACCRUALS RELATED TO UTILITY PLANT AS OF DECEMBER 31, 2018

DEPRECIABLE GROUP (1)	SURVIVOR CURVE (2)	ORIGINAL COST (3)	BOOK RESERVE (4)	FUTURE ACCRUALS (5)	ANNUAL		COMPOSITE REMAINING LIFE (8)
					ACCRUAL AMOUNT (6)	ACCRUAL RATE (7)=(6)/(3)	
344.00	LABORATORY EQUIPMENT	129,279.71	90,276	39,004	4,778	3.70	8.2
346.00	COMMUNICATION EQUIPMENT	6,929,738.85	3,372,284	3,557,455	573,508	8.28	6.2
347.00	MISCELLANEOUS EQUIPMENT	147,854.10	29,434	118,420	10,948	7.40	10.8
	TOTAL DEPRECIABLE PLANT	357,019,936.50	78,546,395	278,473,541	8,738,437	2.45	31.9
	AMORTIZATION OF NET SALVAGE				265,804		
	TOTAL UTILITY PLANT IN SERVICE	361,574,022.93	78,561,485	278,473,541	9,004,241		

* Life Span Procedure was used. Curve shown is Interim Survivor Curve.

**Rebuttal Exhibit
JJS-2**

SUEZ WATER PENNSYLVANIA, INC.

TABLE 1. SUMMARY OF ESTIMATED SURVIVOR CURVES, ORIGINAL COST, BOOK RESERVE AND CALCULATED ANNUAL DEPRECIATION ACCRUALS RELATED TO UTILITY PLANT AS OF DECEMBER 31, 2019

DEPRECIABLE GROUP (1)	SURVIVOR CURVE (2)	ORIGINAL COST (3)	BOOK RESERVE (4)	FUTURE ACCRUALS (5)	ANNUAL		COMPOSITE REMAINING LIFE (8)	
					ACCRUAL AMOUNT (6)	ACCRUAL RATE (7)=(6)/(3)		
INTANGIBLE PLANT								
301.00	ORGANIZATION	66,399.00	145,805					
302.00	FRANCHISES AND CONSENTS	64,265.56						
303.00	MISCELLANEOUS INTANGIBLE PLANT	4,423,421.87	(124,341)					
	TOTAL INTANGIBLE PLANT	4,554,086.43	21,464					
DEPRECIABLE PLANT								
304.20	STRUCTURES AND IMPROVEMENTS PUMPING	55-R2	3,721,078.15	1,038,181	2,682,897	82,531	2.22	32.5
304.30	WATER TREATMENT PLANT							
	BLOOMSBURG TREATMENT PLANT	55-S1.5	181,380.86	121,461	59,920	8,185	4.51	7.3
	BLOOMSBURG TREATMENT PLANT - NEW	55-S1.5	5,829,778.36	429,116	5,400,662	135,084	2.32	40.0
	SIXTH STREET PLANT	55-S1.5	4,160,026.78	1,715,258	2,444,769	113,621	2.73	21.5
	RICHARD C. RABOLD	55-S1.5	1,619,181.24	859,745	759,436	40,357	2.49	18.8
	MARKET STREET	55-S1.5	101,359.72	82,692	18,668	4,432	4.37	4.2
	OLD HUMMELSTOWN PLANT	55-S1.5	86,583.70	86,584	0	0	-	-
	HUMMELSTOWN MEMBRANE PLANT	55-S1.5	4,410,545.60	1,235,037	3,175,509	104,571	2.37	30.4
	OTHER TREATMENT FACILITIES	50-R3	3,087,574.48	559,134	2,528,440	70,316	2.28	36.0
	TOTAL WATER TREATMENT PLANT		19,476,430.74	5,089,027	14,387,404	476,566	2.45	30.2
304.40	TRANSMISSION AND DISTRIBUTION	40-R3	282,963.06	24,955	258,008	8,220	2.90	31.4
304.51	OFFICES							
	BLOOMSBURG TREATMENT PLANT	55-S1.5	9,246,555.87	671,784	8,574,772	214,075	2.32	40.1
	OTHER OFFICES	45-R2.5	902,220.14	234,792	667,428	23,422	2.60	28.5
	TOTAL OFFICES		10,148,776.01	906,576	9,242,200	237,497	2.34	38.9
304.52	STORES, SHOP AND GARAGE							
	SUMMIT VIEW MAINTENANCE BUILDING	60-S0.5	3,796,912.64	521,179	3,275,734	155,397	4.09	21.1
	OTHER MAINTENANCE BUILDINGS	35-S2.5	461,118.08	100,202	360,916	16,519	3.58	21.8
	TOTAL ACCOUNT STORES, SHOP AND GARAGE		4,258,030.72	621,381	3,636,650	171,916	4.04	21.2
304.53	MISCELLANEOUS	25-S2	351,600.45	182,470	169,130	16,060	4.57	10.5
	TOTAL STRUCTURES AND IMPROVEMENTS		38,238,879.13	7,862,590	30,376,289	992,790	2.60	30.6
305.00	COLLECTING AND IMPOUNDING RESERVOIRS	65-S1	434,632.39	115,869	318,763	7,983	1.84	39.9
306.00	LAKE, RIVER AND OTHER INTAKES							
	ROCKVILLE INTAKE	65-R2.5	4,662,260.11	685,138	3,977,122	166,366	3.57	23.9
	HUMMELSTOWN INTAKE	65-R2.5	1,335,191.80	317,516	1,017,676	29,235	2.19	34.8
	OTHER INTAKES	50-S1	509,724.53	83,586	426,139	13,184	2.59	32.3
	TOTAL LAKE, RIVER AND OTHER INTAKES		6,507,176.44	1,086,240	5,420,937	208,785	3.21	26.0

SUEZ WATER PENNSYLVANIA, INC.

TABLE 1. SUMMARY OF ESTIMATED SURVIVOR CURVES, ORIGINAL COST, BOOK RESERVE AND CALCULATED ANNUAL DEPRECIATION ACCRUALS RELATED TO UTILITY PLANT AS OF DECEMBER 31, 2019

	DEPRECIABLE GROUP (1)	SURVIVOR CURVE (2)	ORIGINAL COST (3)	BOOK RESERVE (4)	FUTURE ACCRUALS (5)	ANNUAL		COMPOSITE REMAINING LIFE (8)
						ACCRUAL AMOUNT (6)	ACCRUAL RATE (7)=(6)/(3)	
307.00	WELLS AND SPRINGS	48-R2	1,028,041.81	545,289	482,753	17,514	1.70	27.6
308.00	INFILTRATION GALLERIES AND TUNNELS	40-R2.5	13,358.04	2,857	10,501	400	2.99	26.3
	PUMPING EQUIPMENT							
311.20	ELECTRIC PUMPING EQUIPMENT	36-R0.5	16,323,712.46	5,225,880	11,097,832	584,088	3.58	19.0
311.30	OIL ENGINE PUMPING EQUIPMENT	35-R2	314,155.59	254,820	59,336	3,833	1.22	15.5
	TOTAL PUMPING EQUIPMENT		16,637,868.05	5,480,700	11,157,168	587,921	3.53	19.0
	WATER TREATMENT PLANT							
320.10	STRUCTURES AND IMPROVEMENTS							
	BLOOMSBURG TREATMENT PLANT	50-R1.5	338,354.21	328,621	9,733	1,217	0.36	8.0
	BLOOMSBURG TREATMENT PLANT - NEW	50-R1.5	13,979,069.61	1,705,385	12,273,685	393,097	2.81	31.2
	SIXTH STREET PLANT	50-R1.5	10,677,577.98	6,119,677	4,557,901	220,784	2.07	20.6
	RICHARD C. RABOLD	50-R1.5	1,756,585.15	1,226,972	529,613	27,973	1.59	18.9
	MARKET STREET	50-R1.5	192,621.85	177,018	15,604	3,522	1.83	4.4
	OLD HUMMELSTOWN PLANT	50-R1.5	858,433.64	858,434	0	0	-	-
	HUMMELSTOWN MEMBRANE PLANT	50-R1.5	9,469,382.38	3,882,500	5,586,882	198,548	2.10	28.1
	OTHER TREATMENT FACILITIES	40-R1.5	892,814.19	498,461	394,353	16,326	1.83	24.2
	TOTAL STRUCTURES AND IMPROVEMENTS		38,164,839.01	14,797,068	23,367,771	861,467	2.26	27.1
320.20	PAINTING	10-SQ	447,524.82	262,662	184,863	39,209	8.76	4.7
320.30	CHEMICAL EQUIPMENT	25-S0.5	8,440,371.24	1,197,782	7,242,589	572,364	6.78	12.7
	TOTAL WATER TREATMENT PLANT		47,052,735.07	16,257,512	30,795,223	1,473,040	3.13	20.9
330.00	DISTRIBUTION RESERVOIRS AND STANDPIPES	45-R1.5	13,384,165.34	3,657,749	9,726,416	370,840	2.77	26.2
331.00	TRANSMISSION AND DISTRIBUTION MAINS	80-R3	187,429,065.33	17,783,937	169,645,128	2,924,600	1.56	58.0
333.00	SERVICES	60-S2.5	40,576,966.71	10,787,664	29,789,303	728,191	1.79	40.9
334.00	METERS	25-S1.5	21,325,664.84	6,947,936	14,377,729	946,838	4.44	15.2
335.00	HYDRANTS	60-R4	7,868,389.28	2,572,659	5,295,730	131,295	1.67	40.3
339.00	OTHER PLANT AND MISCELLANEOUS EQUIPMENT	40-S2	539,255.49	387,356	151,899	8,424	1.56	18.0
	OFFICE FURNITURE AND EQUIPMENT							
340.10	COMPUTERS AND SOFTWARE	5-SQ	2,646,180.68	2,550,409	95,772	80,752	3.05	1.2
340.11	SOFTWARE - LARGE	8-SQ	3,665,579.00	3,659,926	5,653	5,653	0.15	1.0
340.20	FURNITURE	15-SQ	659,446.10	303,872	355,574	33,197	5.03	10.7
	TOTAL OFFICE FURNITURE AND EQUIPMENT		6,971,205.78	6,514,207	456,999	119,602	1.72	3.8
341.00	TRANSPORTATION EQUIPMENT	7-L3	1,057.45	529	528	215	20.33	2.5
	TOOLS, SHOP AND GARAGE EQUIPMENT							
343.10	SHOP AND GARAGE EQUIPMENT	20-SQ	1,147,657.06	403,592	744,065	49,132	4.28	15.1
343.20	TOOLS AND WORK EQUIPMENT	20-SQ	2,187,579.26	773,888	1,413,691	109,862	5.02	12.9
	TOTAL TOOLS SHOP AND GARAGE EQUIPMENT		3,335,236.32	1,177,480	2,157,756	158,994	4.77	13.6

SUEZ WATER PENNSYLVANIA, INC.

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DEPRECIABLE GROUP (1)	SURVIVOR CURVE (2)	ORIGINAL COST (3)	BOOK RESERVE (4)	FUTURE ACCRUALS (5)	ANNUAL		COMPOSITE REMAINING LIFE (8)
					ACCRUAL AMOUNT (6)	ACCRUAL RATE (7)=(6)/(3)	
344.00	LABORATORY EQUIPMENT	127,367.71	93,144	34,224	4,514	3.54	7.6
346.00	COMMUNICATION EQUIPMENT	7,076,786.57	3,853,805	3,222,982	554,240	7.83	5.8
347.00	MISCELLANEOUS EQUIPMENT	147,854.10	40,375	107,479	10,332	6.99	10.4
TOTAL DEPRECIABLE PLANT		398,695,705.85	85,167,898	313,527,807	9,246,518	2.32	33.9
AMORTIZATION OF NET SALVAGE					319,853		
TOTAL UTILITY PLANT IN SERVICE		403,249,792.28	85,189,362	313,527,807	9,566,371		

* Life Span Procedure was used. Curve shown is Interim Survivor Curve.

Rebuttal Exhibit
JJS-3

SUMMARY OF PLANT IN SERVICE ACTIVITY FOR THE YEARS ENDED DECEMBER 31, 2018 AND DECEMBER 31, 2019

ACCOUNT	2018					2019				
	BALANCE AS OF 12/31/2017	ADDITIONS	RETIREMENTS	TRANSFERS, ADJUSTMENTS AND ACQUISITIONS	BALANCE AS OF 12/31/2018	ADDITIONS	RETIREMENTS	TRANSFERS, ADJUSTMENTS AND ACQUISITIONS	BALANCE AS OF 12/31/2019	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	
301.00 ORGANIZATION	66,399.00				66,399.00				66,399.00	
302.00 FRANCHISES AND CONSENTS	64,265.56				64,265.56				64,265.56	
303.00 MISCELLANEOUS INTANGIBLE PLANT	4,366,092.40	57,329.47			4,423,421.87				4,423,421.87	
304.20 PUMPING STRUCTURES	3,721,078.15				3,721,078.15				3,721,078.15	
304.30 WATER TREATMENT PLANT STRUCTURES	19,476,430.74				19,476,430.74				19,476,430.74	
304.40 TRANSMISSION AND DISTRIBUTION STRUCTURES	282,963.06				282,963.06				282,963.06	
304.51 OFFICE STRUCTURES	9,765,842.65	192,627.03	20,800.00		9,937,669.68	231,906.33	20,800.00		10,148,776.01	
304.52 STORES, SHOP AND GARAGE STRUCTURES	1,570,598.14	29,811.34	36,400.00		1,564,009.48	2,730,421.24	36,400.00		4,258,030.72	
304.53 MISCELLANEOUS STRUCTURES	352,038.57	6,879.53	7,800.00		351,118.10	8,282.35	7,800.00		351,600.45	
305.00 COLLECTING AND IMPOUNDING RESERVOIRS	434,632.39				434,632.39				434,632.39	
306.00 LAKE, RIVER AND OTHER INTAKES	3,364,843.60				3,364,843.60	3,232,332.84	90,000.00		6,507,176.44	
307.00 WELLS AND SPRINGS	1,028,041.81				1,028,041.81				1,028,041.81	
308.00 INFILTRATION GALLERIES AND TUNNELS	13,358.04				13,358.04				13,358.04	
311.20 ELECTRIC PUMPING EQUIPMENT	14,091,239.53	888,606.86	90,000.00		14,889,846.39	1,628,866.07	195,000.00		16,323,712.46	
311.30 OIL ENGINE PUMPING EQUIPMENT	314,155.59				314,155.59				314,155.59	
320.10 STRUCTURES AND IMPROVEMENTS	37,509,056.38	103,193.05	25,000.00		37,587,249.43	662,589.58	85,000.00		38,164,839.01	
320.20 PAINTING	447,524.82				447,524.82				447,524.82	
320.30 CHEMICAL EQUIPMENT	6,563,931.98	229,317.90	50,000.00		6,743,249.88	1,822,121.36	125,000.00		8,440,371.24	
330.00 DISTRIBUTION RESERVOIRS AND STANDPIPES	9,806,864.93	1,433,236.87	100,000.00		11,140,101.80	2,319,063.54	75,000.00		13,384,165.34	
331.00 TRANSMISSION AND DISTRIBUTION MAINS	143,623,963.03	16,069,451.81	280,000.00		159,413,414.84	28,695,650.49	680,000.00		187,429,065.33	
333.00 SERVICES	39,198,130.39	671,901.44	22,000.00		39,848,031.83	750,934.88	22,000.00		40,576,966.71	
334.00 METERS	18,835,239.43	1,338,069.94	70,000.00		20,103,309.37	1,242,355.47	20,000.00		21,325,664.84	
335.00 HYDRANTS	7,696,446.42	82,554.44	5,000.00		7,774,000.86	99,388.42	5,000.00		7,868,389.28	
339.00 OTHER PLANT AND MISCELLANEOUS EQUIPMENT	539,255.49				539,255.49				539,255.49	
340.10 COMPUTERS AND SOFTWARE	3,461,144.25		162,368.14		3,298,776.11		652,595.43		2,646,180.68	
340.11 SOFTWARE - LARGE	3,665,579.00				3,665,579.00				3,665,579.00	
340.20 FURNITURE	659,446.10				659,446.10				659,446.10	
341.00 TRANSPORTATION EQUIPMENT - TRUCKS	1,057.45				1,057.45				1,057.45	
343.10 SHOP AND GARAGE EQUIPMENT	770,429.12	377,227.94			1,147,657.06				1,147,657.06	
343.20 TOOLS AND WORK EQUIPMENT	2,070,505.75	110,072.59	114,315.57		2,066,262.77	132,517.92	11,201.43		2,187,579.26	
344.00 LABORATORY EQUIPMENT	140,443.25		11,163.54		129,279.71		1,912.00		127,367.71	
346.00 COMMUNICATION EQUIPMENT	6,834,027.66	201,799.75	106,088.56		6,929,738.85	242,949.52	95,901.80		7,076,786.57	
347.00 MISCELLANEOUS EQUIPMENT	147,854.10				147,854.10				147,854.10	
TOTAL WATER PLANT	340,882,878.78	21,792,079.96	1,100,935.81	0.00	361,574,022.93	43,799,380.01	2,123,610.66	0.00	403,249,792.28	

VERIFICATION

I, John J. SPANOS, hereby state that the facts set forth above are true and correct to the best of my knowledge, information and belief and that I expect to be able to prove the same at a hearing held in this matter. I understand that the statements herein are made subject to the penalties of 18 Pa. C.S. § 4904 (relating to unsworn falsification to authorities).

Date: October 10, 2018

John J. Spanos